

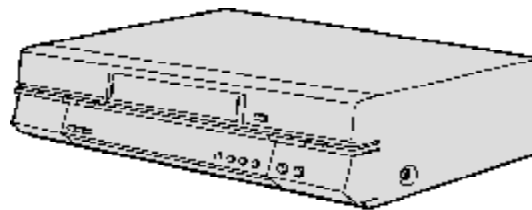
ORDER NO. MAVR0304001C3

Service Manual

Video Cassette Recorder

Panasonic **VHS** **Hi-Fi**
PAL NTSC

NV-HV60GL / NV-HV60GC / NV-HV60GCS / NV-HV60GM
R4-MECHANISM



SPECIFICATIONS

SPECIFICATIONS

ITEM	SPECIFICATION		ITEM	SPECIFICATION
POWER	SOURCE: 220-240V AC 50/60 Hz (NV-HV60GL) 110-240V AC 50/60 Hz (NV-HV60GC/GCS/GM)		AUDIO	HEAD: 1 Stationary head (Normal-mono only) 2 channels (Hi-Fi Sound-Stereo)
	CONSUMPTION: 13 watts (NV-HV60GL) 12 watts (NV-HV60GC/GCS/GM)			INPUT: AUDIO IN (AV1: REAR) Connector (Phono type) -6 dBV (500mV), More than 10k Ω AUDIO IN (AV2: FRONT) Connector (Phono type) -6 dBV (500mV), More than 10k Ω
RECORDING SYSTEM	2 rotary heads, helical scanning system		TAPE SPEED	OUTPUT: AUDIO OUT (AV1: REAR) Connector (Phono type) -6 dBV (500mV), Less than 1k Ω
	PAL/ NTSC			
TV TUNER SYSTEM	NV-HV60GL	VHF: CH0-CH12 (PAL B) UHF: CH28-CH69 (PAL G) CATV: 45 MHz-470 MHz (PAL B)	OPERATING TEMPERATURE	SP: 23.39 mm/s (PAL), 33.3 mm/s (NTSC) LP: 11.695 mm/s (PAL) EP: 7.796 mm/s (PAL), 11.1 mm/s (NTSC) Record/Playback Time (PAL): SP: 4 hours with 240 min. type tape LP: 8 hours with 240 min. type tape EP: 12 hours with 240 min. type tape FF/REW Time: 60 sec. with 180 min. type tape JFT RFW Time: 43 sec. with 180 min. type tape
	NV-HV60GC /GCS/GM	VHF: CHC1-CHC12 (PAL/SECAM D) CHE2-CHE12 (PAL/SECAM B) CHR1-CHR12 (SECAM D) UHF: CHC13-CHC57 (PAL/SECAM D) CHE21-CHE69 (PAL/SECAM G) CHE21-CHE69 (SECAM K) CHE21-CHE69 (PAL I) CATV: CHZ1-CHZ35 (PAL/SECAM D) CHS1-CHS41 (PAL/SECAM B) 44 MHz-470 MHz (SECAM D)		OPERATING HUMIDITY
RF OUT SYSTEM	NV-HV60GL	UHF: CH28-CH69 (PAL G) 71 $\pm$ 3 dB μ , 75 Ω closed	DIMENSIONS	430 (W) $\times$ 89 (H) $\times$ 227 (D) mm
	NV-HV60GC/ GCS/GM	UHF: CHE21-CHE69 (PAL/SECAM G, SECAM K, PAL I) 71 $\pm$ 3 dB μ , 75 Ω closed	WEIGHT	3.0 kg
VIDEO	HEADS: 4 rotary heads 1 pair for recording and playback (L-R heads) 1 pair for trick play (L-R' heads)		STANDARD ACCESSORIES	1 pc. DIN-RF Cable 1 pc. Infra-red Remote Controller 1 pc. AV Cable 1 pc. AC Plug Adaptor (NV-HV60GC)
	INPUT: VIDEO IN (AV1: REAR) Connector (Phono type) 1.0 Vp-p, 75 Ω terminated VIDEO IN (AV2: FRONT) Connector (Phono type) 1.0 Vp-p, 75 Ω terminated		SOLDER	This model use lead free solder (PbF).
	OUTPUT: VIDEO OUT (AV1: REAR) Connector (Phono type) 1.0 Vp-p, 75 Ω terminated			

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

1. INTRODUCTION

1.1. INTRODUCTION

This service manual contains technical information which will allow service personnel to understand and service this model.

If the circuit is changed or modified, this information will be followed by supplementary service manual to be filed with original service manual.

Note:

1. Adjustment procedures, Disassembly Procedures and Assembly Procedures for Mechanism Chassis are separate volume from this service manual.

**Please refer to the service manual for R4-Mechanism Chassis.
(Order No. VRD0202010C8)**

2. The Model No. is indicated on the Schematic Diagram and Circuit Board Diagrams as follows.

Model No.	Indication Mark
NV-HV60GL	(GL)
NV-HV60GC	(GC)
NV-HV60GCS	(GCS)
NV-HV60GM	(GM)

1.2. ABOUT LEAD FREE SOLDER (PbF)

Distinction of PbF PCB:

PCBs (manufactured) using lead free solder will have a PbF stamp on the PCB.

Caution:

**- Pb free solder has a higher melting point than standard solder,
Typically the melting point is 50-70°F (30-40°C) higher. Please use
a high temperature soldering iron. In case of soldering iron with
temperature control, please set it to 700±20°F (370±10°C)**

- Pb free solder will tend to splash when heated too high (about 1100°F/600°C).

When soldering or unsoldering, please completely remove all of the solder on the pins or solder area, and be sure to heat the soldering points with the Pb free solder until it melts enough.

2. GENERAL DESCRIPTIONS

2.1. SERVICE CAUTION-1

When the Microprocessor IC6001 and/or Back-up battery B7751 are replaced, read the following procedure carefully and proceed it.

[REASONS]

There is a RAM in the IC6001, which is backing up:

- 1. Programme Navigation Data [See NOTE1]**
- 2. TV Tuning Data**
- 3. PG Shifter Adjustment Data**
- 4. Option Setting Data**

When IC6001 are replaced, all above listed data become not available.

These data is backed up by using the power source of:

*AC Connected: AC Power source

*AC Disconnected: Back-up Battery (B7751) & Back-up Capacitor (C7752)

[NOTE1]

As for your reference, without inserting a tape into a VCR, you can confirm that the NAVI data that is back up with IC6001 as shown in the following steps.

- 1. Indicate the "NAVI" mark on the Front Information Panel. (Press the Menu button and select the option, then set the "NAVI" to ON mode.)**
- 2. Turn on the Service Mode and press the "NAVI" button on the Remote Controller in more than 5 seconds. The "NAVI" data list is displayed on the Monitor. (Press the "MENU" button on the Remote Controller for cancellation.)**

Although stored NAVI data can be confirmed on the monitor, there is no way to transfer the NAVI data to IC6001 which is newly mounted.

2.1.1. REPLACING PROCEDURE [IC6001]

[1.PREPARATION]

Before replacing IC6001:

1. Take note that stored TV broadcast channels. (Because, its user may store TV broadcasts by manually other than "Auto Tuning" operation and it is also erased.)

NOTE:

During servicing, do not make a short circuit between IC6001-pin 37 (5V) with other line/ Components otherwise IC6001 may be broken.

CAUTION:

***When replacing the B7751, be sure to read/follow the "HOW TO REPLACE THE LITHIUM BATTERY" section.**

[2.REPLACING PROCEDURE IN STEPS]

STEP1.PREPARATION

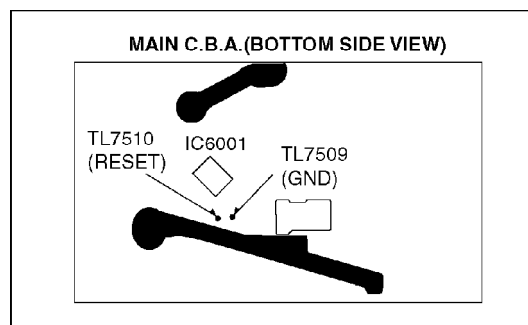
1. Disconnect the AC plug before removing the C.B.A. with Mechanism unit by referring to the Disassembly procedure.

STEP2.REPLACE THE IC6001

1. Replace the IC6001. (Do not make a short circuit between IC6001-pin37 and other pins/Components.)

STEP3.RESET THE IC6001 AT ONCE

1. Connect the AC plug.
2. Connect a jumper wire between TL7510 (RESET) and TL7509 (GND) for a second to reset the Microprocessor IC6001.



Note:

Since the resistance at pin 2 as well as pin 3 of IC6001 decides the model distinction data, there

is no need to set up the Model code, which is necessary in the previous models.

**STEP4.LINE-IN SETTING & ACTIVATE PLUG-IN A.T.P.
(FOR OTHER THAN NV-HV60GL)**

- 1. Press the Channel up and down keys simultaneously for more than 3 seconds, under the condition of the no tape is in the unit.**
- 2. Confirm that "A1" and "A2" can be displayed on the FIP by pressing the CH UP and CH DOWN buttons.**

NOTE:

If "DIRECT REC" on the OPTION setting screen is set to [ON], the input signal is fixed to "A1", and the Channel up and down keys are not effective.

- 3. Disconnect the AC plug for few seconds and connect it again, and press POWER button for turning the power to on from off to carry out the "Plug in Auto Tuner Preset".**
- 4. Since other than the channels that can be stored by "Auto Tuning" operation are not available yet, preset manually by consulting the note of its available TV channels of which you took before.**

NOTE:

The Factory shipping condition of OSD setting is not restored by above operation.

- 5. Change the OSD setting to the Factory shipping condition if necessary, by referring to Option Setting on the Operating Instructions as shown in the following chart.**

EXAMPLE:

OPTION	
TAPE SELECT	[AUTO]
NTSC INPUT SELECT	[AUTO]
NTSC PB SELECT	[on PAL TV]
JET NAVIGATOR	[OFF]
DELETE NAVIDATA	[NO]
OSD REC	[OFF]
OSD	[AUTO]
SELECT:	END: MENU

STEP5.COMPATIBILITY ADJUSTMENT

Refer to the Electrical Adjustment Procedures.

2.2. HOW TO REPLACE THE LITHIUM BATTERY

2.2.1. GENERAL DESCRIPTION

There is a RAM in the IC6001, which is backing up the following data by using the power source of B7751 (Back-up Battery) and C7752 (Back-up Capacitor: Back-up time is approximately 30 minutes).

1. Programme Navigation Data
2. TV Tuning Data
3. PG Shifter Adjustment Data
4. Option Setting Data

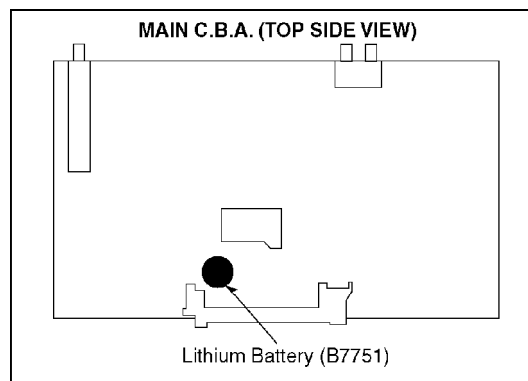
2.2.2. REPLACEMENT PROCEDURE

NOTE:

This work should be finished within 30 minutes so that the RAM data would not be lost as running out of current from the Back-up Capacitor C7752.

1. Remove the Top Panel and Mechanism unit with Main C.B.A by referring to the Disassembling Procedure.
2. Unsolder the Lithium Battery: B7751 and then replace it with a new one (See **Fig. B1**).

Fig. B1



NOTE:

The lithium battery is a critical component (Manufactured by Panasonic.)

It must never be subjected to excessive heat or discharge.

It must therefore only be fitted in equipment designed specifically for its use.

Replacement batteries must be of the same type and manufacture.

They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.

Do not attempt to re-charge the battery or re-use it for any other purpose.

It should be disposed of in waste products destined for burial rather than incineration.

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the equipment manufacturer.

Discard used batteries according to manufacturer's instructions.

PRECAUTION

Le fait de remplacer incorrectement la pile peut présenter des risques d'explosion.

Remplacer la pile uniquement par une pile identique ou de type équivalent recommandée par le fabricant. Se débarrasser des piles usagées conformément aux instructions du fabricant.

VORSICHT

Bei einer falsch eingesetzten Batterie besteht Explosionsgefahr. Nur mit einer vom Hersteller empfohlenen Batterie vom gleichen Typ ersetzen.

Verbrauchte Batterien beim Fachhändler oder einer Sammelstelle für Sonderstoffe abliefern.

VARNING

Explosionsfara vid felaktigt batteribyte.

Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren.

Kassera använt batteri enligt fabrikantens instruktion.

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.

Udskiftning må kun ske med batteri af samme fabrikat og type.

Levér det brugte batteri tilbage til leverandøren.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.

Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.

Hävitätte käytetty paristo valmistajan ohjeiden mukaisesti.

2.3. SERVICE CAUTION-2

2.3.1. CAUTION FOR AUTO TUNING

PROCEDURE

Auto Tuning will start by the following procedure.

1. Connect the DIN-RF Cable.

2. Connect the AC Mains Lead.

3. Turn on the VCR.

Auto Tuning will start.

Auto Tuning search for TV stations from VHS minimum to UHF maximum and memorizes every tuned program position. Other program positions are skipped.

Auto Tuning takes five or more minutes to complete its search.

Do not touch the VCR during Auto Tuning.

Auto Tuning will stop halfway, if the VCR is operated or the aerial lead and/or the mains lead are disconnected.

In case the VCR stopped during Auto Tuning, the VCR has to be reset and restarted. See the following item 2.

NOTE:

- 1. If the VCR is turned on with the antenna not connected, all channels are skipped. Therefore, firmly connect the antenna and then turn the VCR off and on again to execute Auto tuning.**
- 2. When Auto Tuning is canceled halfway, Auto Tuning is not execute even if the VCR is turned off and then turned on again, In this case, Auto Tuning has to be restarted by the following procedures.**
 - A. Press EJECT and remove the Videocassette.**
 - B. Keep UP and DOWN on the VCR pressed simultaneously for 3 seconds or more during the VCR on.**

The channel displayed on the VCR display disappears for moment then changes to 2.
 - C. Turn off the VCR and then turn it on. Auto Tuning commences.**
- 3. If you turn the VCR off during Auto Tuning, Auto Tuning will stop halfway.**

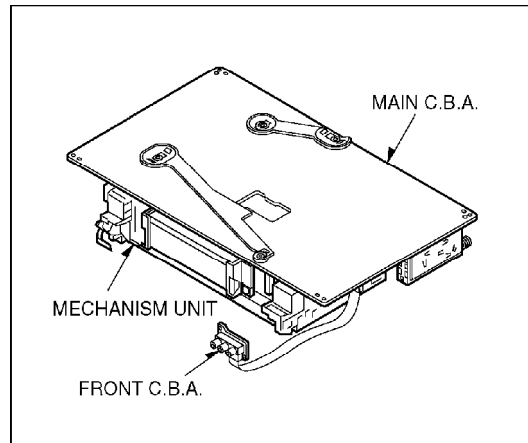
The VCR should be reset and restarted by the item 2 in order to execute Auto Tuning.
- 4. If the VCR starts playback during Auto Tuning, Auto Tuning will stop halfway.**

The VCR should be reset and restarted by the item 2 in order to execute Auto Tuning.
- 5. To cancel Auto Tuning Mid-operation, press POWER During Auto Tuning (The VCR is turned off).**
- 6. When the VCR is moved to the other area or country, TV broadcasts should be stored again.**

2.3.2. CHECKING OF MAIN C.B.A.

When servicing the MAIN C.B.A., take out the MAIN C.B.A. and mechanism from the frame. Turn the MAIN C.B.A. over as shown in **Fig. S1** .

Fig. S1



2.3.3. REMOVAL OF CASSETTE TAPE

When the cassette tape could not be uninstalled from an electrical malfunction, There are 2 ways to remove a cassette tape.

1. Removal by compulsory unloading.

A. Press FF and EJECT button simultaneously for more than 3 seconds and set the Service Mode to 7.

B. Press STOP button in order to unload the mechanism. (Pay attention to tape slack)

Service Mode Indication:

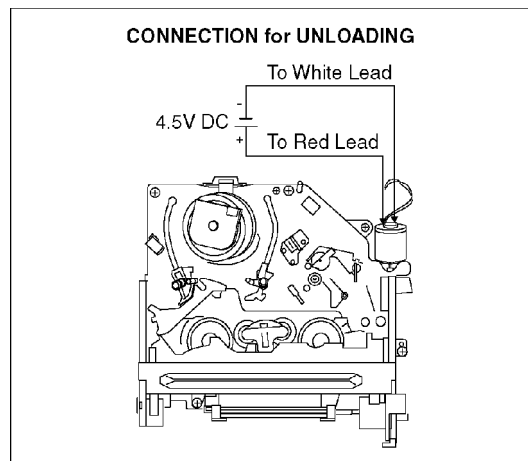
7 ** ** (STOP) → 7 0L ** (EJECT)

2. Removal by manual operation by rotating the Loading Motor with the batteries.

A. Disconnect the AC plug, and remove the Top Panel and the Front Panel by referring to the Disassembly Procedures.

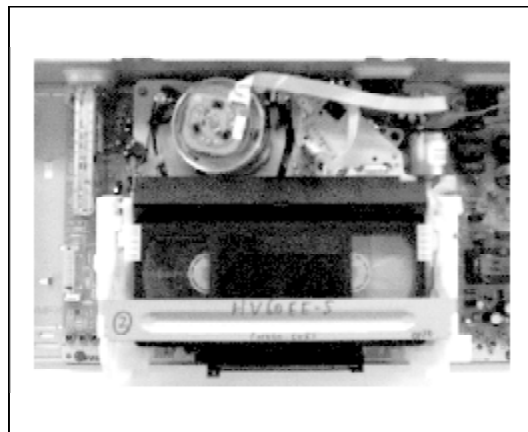
B. Connect three batteries (1.5V spec.) to the Loading Motor in series for supplying 4.5V to rotate the Loading Motor as shown in **Fig. S2** .

Fig. S2



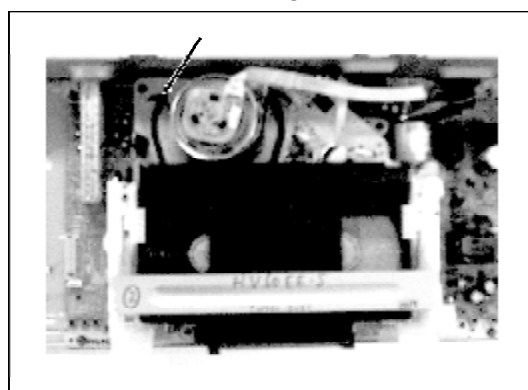
C. Stop unloading just before unloading would be completed as shown in [Fig. S3](#) .

Fig. S3



D. Then the tape becomes slack as shown in [Fig. S4](#) .

Fig. S4



E. Rotate the S-Reel by a small minus screwdriver ([Fig. S5](#)) to remove the slack tape as shown in [Fig. S6](#) .

Fig. S5

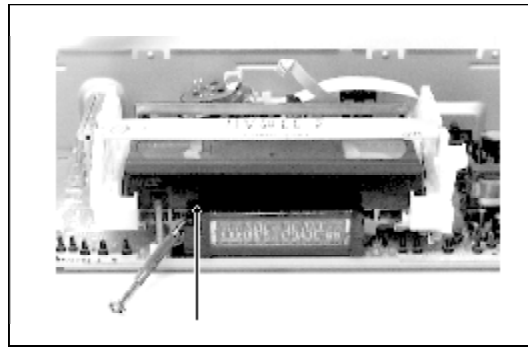
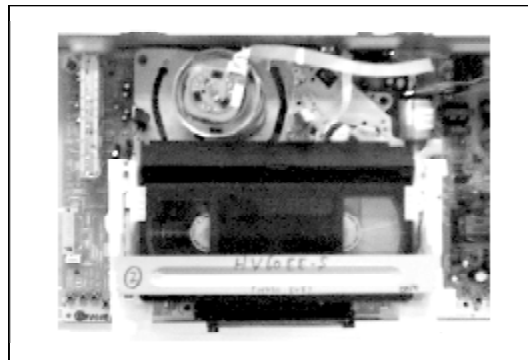
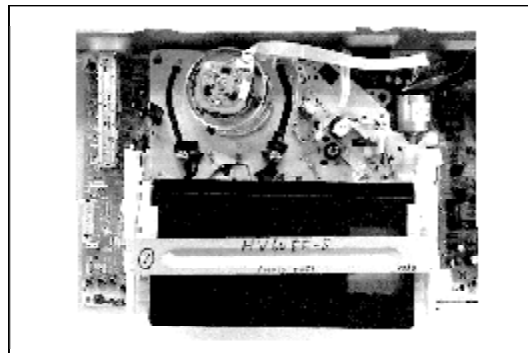


Fig. S6



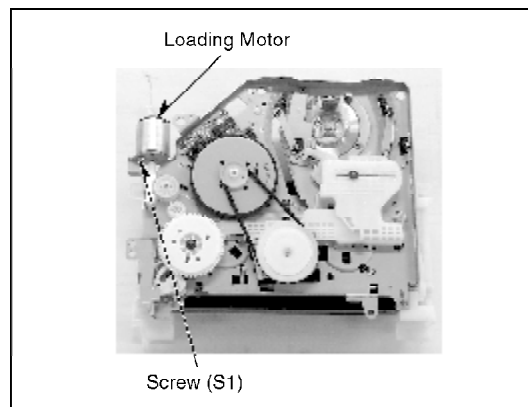
F. Then unload again to remove the cassette tape as shown in [Fig. S7](#) .

Fig. S7



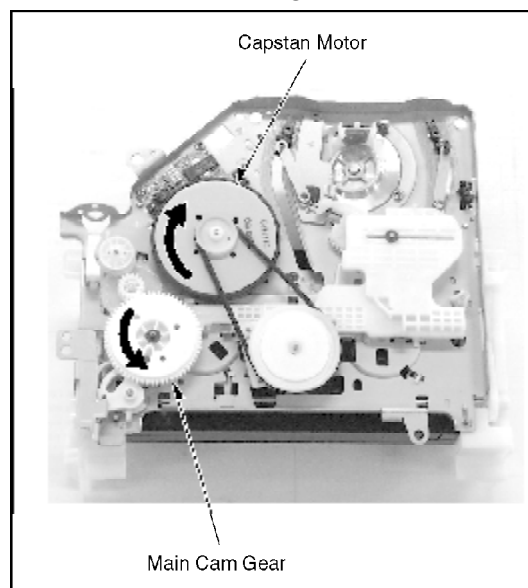
- 3. Removal by manual operations after uninstalling the mechanism, refer to the DISASSEMBLY METHOD of item 3.1.**
 - A. Disconnect the AC plug, and remove the Top Panel, Front Panel and the Mechanism by referring to the Disassembly Procedures.**
 - B. Remove the Screw (S1) and remove the Loading Motor both as shown in [Fig. S8](#) .**

Fig. S8



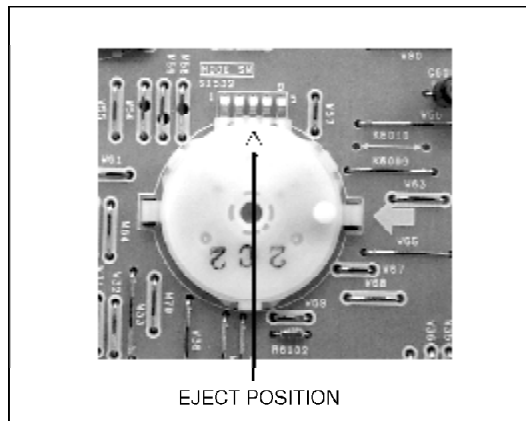
- C. Rotate the Main Cam Gear counter-clockwise (**Fig. S9**) until just before the unloading would be completed as shown in **Fig. S3** .
- D. Rotate the Capstan Motor clockwise (**Fig. S9**) to remove the slack tape as shown in **Fig. S6** .

Fig. S9



- E. Rotate the Main Cam Gear counter-clockwise again (**Fig. S9**) to remove the cassette-tape as shown in **Fig. S7** .
- F. Set the Position Switch to EJECT POSITION certainly as shown in **Fig. S10** .

Fig. S10



G. Install the Loading Motor and tighten screw (S1) as shown in [Fig. S8](#) .

2.3.4. CYLINDER UNIT REPLACEMENT

NOTE:

Replacing only Upper Cylinder unit of R4 Mechanism cannot be performed, as securing of RT gap is impossible out of factory, please replace the cylinder by whole Cylinder Unit. The Compatibility Adjustment should be performed after replacement of the DD Cylinder Unit.

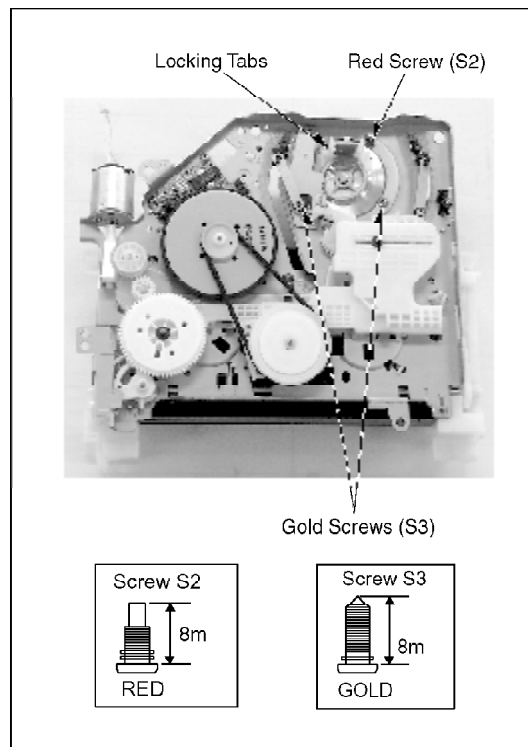
- 1. Remove the Mechanism Unit from Main C.B.A./Chassis by referring to "Disassembly Procedure".**
- 2. Unlock 2 locking tabs on a side to release the Cylinder Flexible Card as shown in [Fig. S11](#) .**

CAUTION:

Handle the Cylinder Flexible Card with care. When it is damaged, you should replace it with a new Cylinder Unit.

- 3. Remove a red Screw (S2) and 2 gold Screws (S3) to remove the Cylinder Unit shown in [Fig. S11](#) .**

Fig. S11



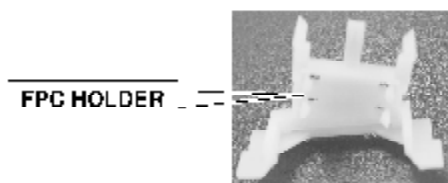
NOTE:

When reassembling, perform the steps in the reverse order, and perform the COMPATIBILITY ADJUSTMENT certainly after CYLINDER UNIT REPLACEMENT.

2.3.5. ATTENTION FOR REPLACING THE DD CYLINDER

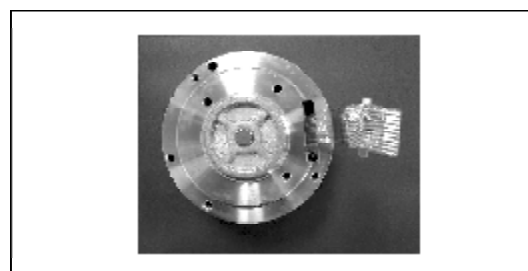
When replace the DD Cylinder Unit, keep next procedure.

1. Put the gloves on your hands.



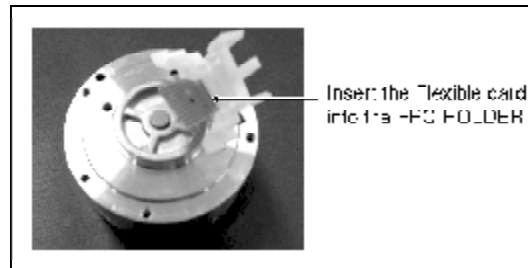
2. Turn the DD Cylinder Unit over.

Fig. S12



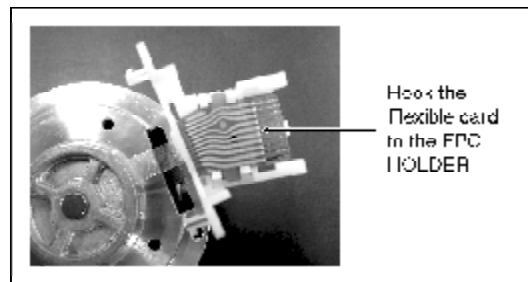
3. Insert the Flexible card into the FPC HOLDER.

Fig. S13



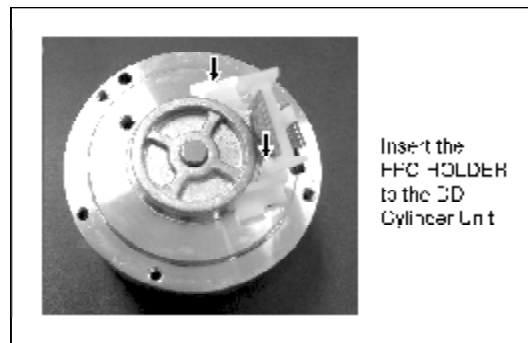
4. Hook the Flexible card to the FPC HOLDER.

Fig. S14



5. Insert the FPC HOLDER to the DD Cylinder Unit.

Fig. S15

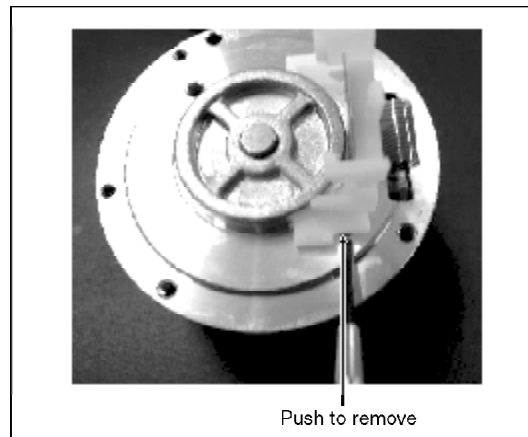


6. The "COMPATIBILITY ADJUSTMENT" should be performed after the replacement of the DD Cylinder Unit.

NOTE:

In case that you have inserted the FPC HOLDER to the DD Cylinder Unit before inserting the Flexible card into the FPC HOLDER. Pushing stopper portion of the FPC HOLDER with a small minus screw driver and so on, remove the FPC HOLDER while paying attention for not to scratch the DD Cylinder and not to break the Head Chip as shown below.

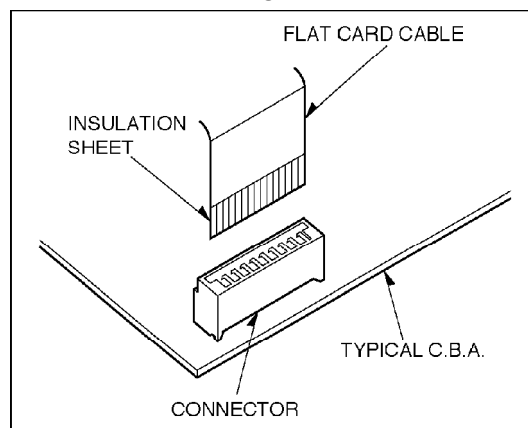
Fig. S16



2.3.6. FLAT CARD CABLE INSTALLATION

When installing the Flat Card Cable on the connector, install the Flat Card Cable with the cable contacts facing the connector contacts.

Fig. S17



2.4. SELF-DIAGNOSIS & SERVICE INFORMATION DISPLAY

Refer to the Service Manual for R4 Mechanism Chassis.
(Order No.: VRD0202010C8).

2.5. INTRODUCTION OF VIDEO HEAD CLEANING CASSETTE / (POLISHING TYPE)

1. We are pleased to introduce Panasonic Video Head Cleaning Cassette, VFK0923FT [for service purposes] and VFK0923FSE [for end users] for all VHS/S-VHS VCP and VCR.
2. These cleaning cassettes are exclusive removing the hard and sticky clogging on video heads.
3. These improve the efficiency of video head cleaning service and shortening cleaning time for end users.

VFK0923FT (For Service usage)	
Type of Cassette	Full VHS Cassette
Cleaning Time	10 Seconds/Time
Tape Length	20 m
Usability in a Path	180 Times
	

VFK0823FSE (For end users)	
Type of Cassette	Full VHS Cassette
Cleaning Time	10 Seconds/Time
Tape Length	3.34 m
Usability in a Path	30 Times

VFK0823FSE
(For end users)



Note:

The tape material itself is the same in both types.

3. ADJUSTMENT PROCEDURES

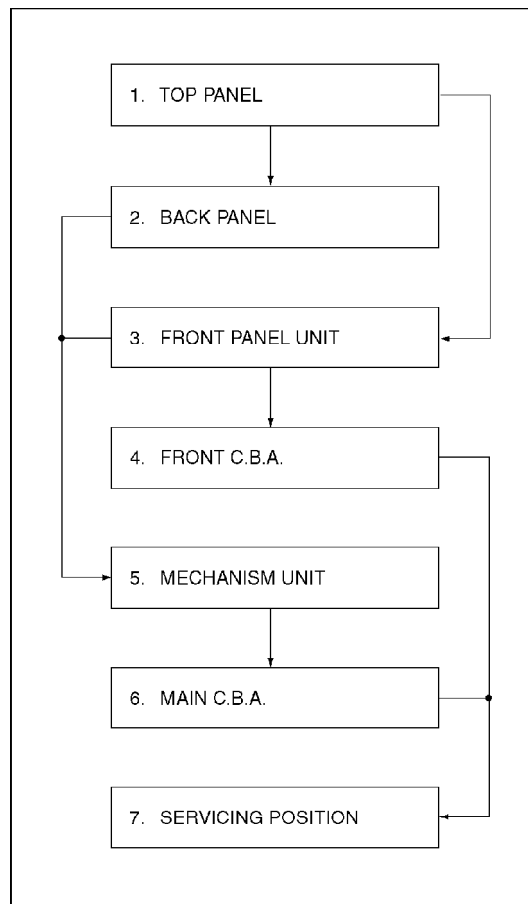
3.1. DISASSEMBLY METHOD

3.1.1. DISASSEMBLY FLOW CHART

This flow chart indicates disassembly steps of the cabinet parts and the circuit boards in order to find the necessary items for servicing.

When reassembling, perform the steps in the reverse order.

Fig. D1

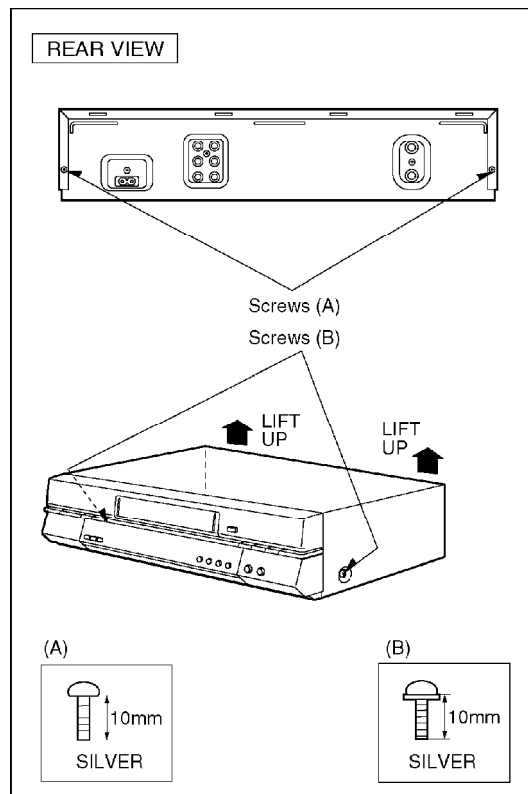


3.1.2. DETAIL OF DISASSEMBLY METHOD

1. REMOVAL OF THE TOP PANEL

Remove	2 Screws (A)
Remove	2 Screws (B)

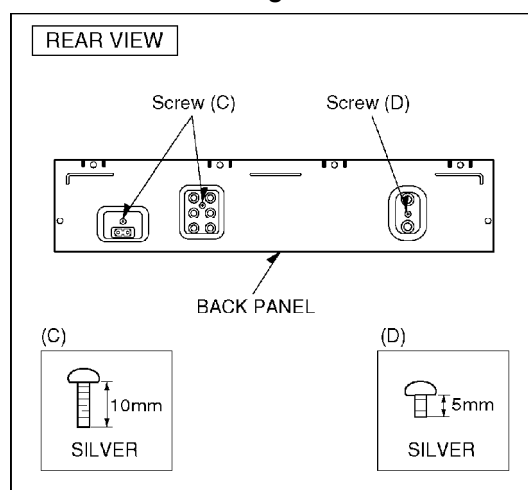
Fig.D2



2. REMOVAL OF THE BACK PANEL

Remove	2 Screws (C)
Remove	Screw (D)

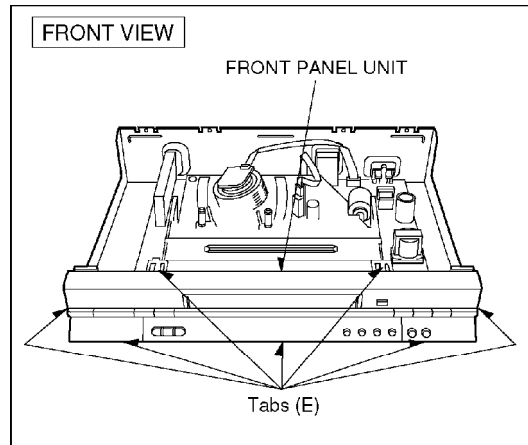
Fig. D3



3. REMOVAL OF THE FRONT PANEL UNIT

Unlock	7 Tabs (E)
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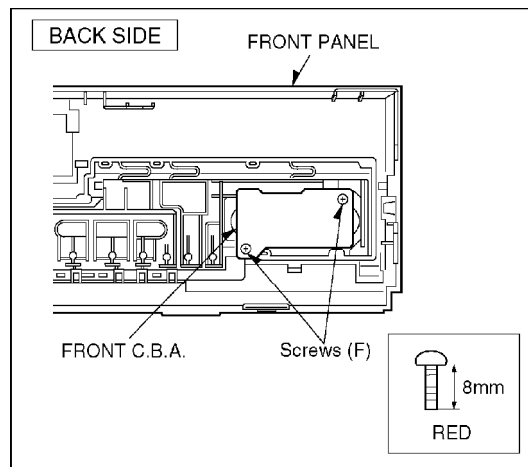
Fig. D4



4. REMOVAL OF THE FRONT C.B.A.

Remove	2 Screws (F)
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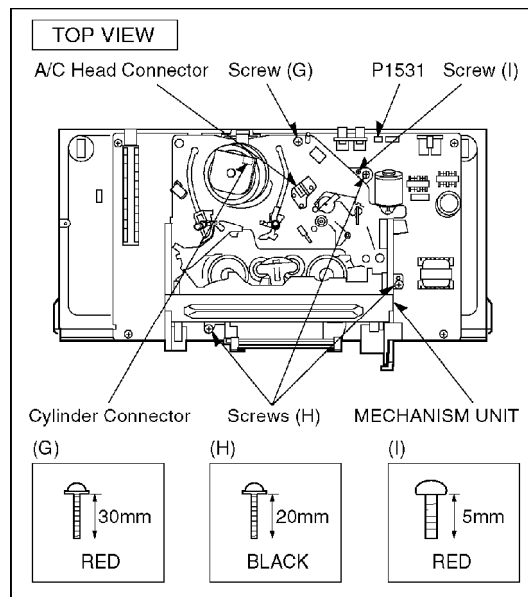
Fig. D5



5. REMOVAL OF THE MECHANISM UNIT

Remove	Screw (G)
Remove	3 Screws (H)
Remove	Screw (I)
Disconnect	Cylinder Connector
Disconnect	A/C Head Connector
Disconnect	P1531

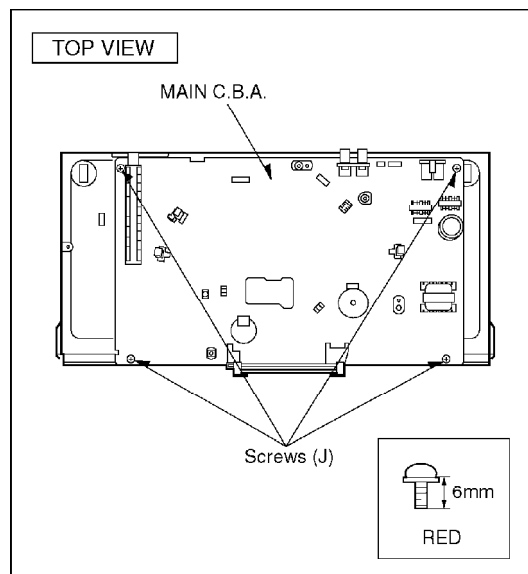
Fig. D6



6. REMOVAL OF THE MAIN C.B.A.

Remove	4 Screws (J)
--------	--------------

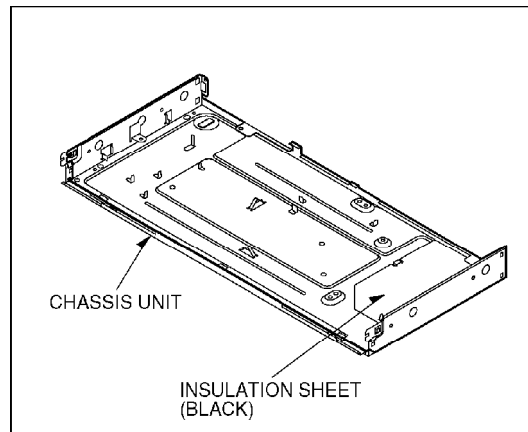
Fig. D7



NOTE:

Before mounting the MAIN C.B.A. onto the frame, be sure to confirm that the insulation sheet is mounted on the frame as shown in [Fig. D8](#).

Fig. D8

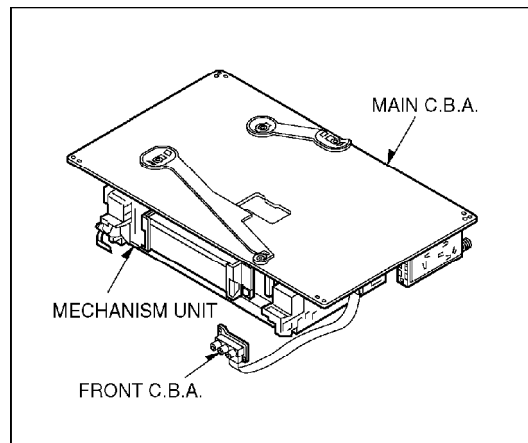


7. SERVICING POSITION

Install the Mechanism Unit on to the MAIN C.B.A..

Then fix a screw (I), and connect two flexible card Connectors (Cylinder connector, AC Head connector) and P1531 as shown in **Fig. D6** .

Fig. D9



3.2. MECHANICAL ADJUSTMENT PROCEDURES

Refer to the Service Manual for R4-Mechanism Chassis.
(Order No. VRD0202010C8)

3.3. ELECTRICAL ADJUSTMENT PROCEDURES

This section provides complete adjustment procedures required for electric circuits of VCR.

3.3.1. TEST EQUIPMENT

To perform electrical adjustments following equipment is required.

1. VHS Alignment Tape. (VFJ8125H3F)

2. Monitor

3.3.2. SERVO SECTION

PG SHIFTER ADJUSTMENT

	PROCEDURE	F.I.P. DISPLAY
1.	Turn on the Service Mode 1.Press the FF key and the EJECT key simultaneously for more than 3 seconds.	
2.	Activate the Service Mode 2 While keep pressing FF key, press the EJECT key in twice.	
3.	Activate the Entering Mode. Press the EJECT key for more than 3 seconds.	
4.	Set the Mode 2. Press the CH UP key once.	
5.	Insert the alignment cassette tape (VFJ8125H3F) The PG Shifter Adjustment starts automatically.	
6.	When the sequence of the automatic adjustment has been terminated, the following action has been made. * SUCCEED: The cassette tape is ejected. * ERROR: The "F20", "F21", "F22" or "F23" is displayed. Refer to next PG Shifter Adjustment Self-Diagnosis Indication Table regarding the details of the indications.	
7.	Exit from Service Mode. Press FF and EJECT keys simultaneously in 6 times. Then the FIP becomes normal indication.	

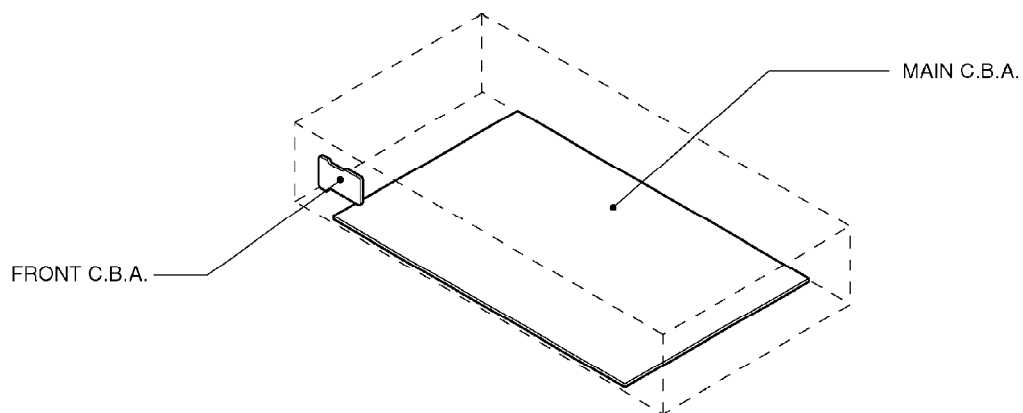
PG SHIFTER AUTOMATIC ADJUSTMENT SELF-DIAGNOSIS INDICATION

F20	NG1 in the PG Shifter Automatic Adjustment (The cylinder rotation is unstable during the automatic adjustment.)
F21	NG2 in the PG Shifter Automatic Adjustment (The vertical sync signal is lacked while over 5 seconds on the alignment tape.)
F22	NG3 in the PG Shifter Automatic Adjustment (The installing position of Heads to the cylinder is out of specification.)
F23	NG4 in the PG Shifter Automatic Adjustment (The servo is not locked to the cylinder for more than 10 sec.)

NOTE:

After replacing the DD Cylinder, the Tape Interchangeability adjustment (X-Value Adjustment, P2 and P3 Posts Adjustment) shown below should be performed after the PG Shifter Automatic Adjustment.

3.3.3. CIRCUIT BOARD LAYOUT



4. ABBREVIATIONS

5. INPUT/OUTPUT CHART FOR IC6001

6. WAVEFORM TABLE & VOLTAGE CHART

6.1. WAVEFORM TABLE

6.2. VOLTAGE CHART

7. BLOCK DIAGRAMS

7.1. SYSTEM CONTROL & SERVO BLOCK DIAGRAM

7.2. LUMINANCE & CHROMINANCE BLOCK DIAGRAM

7.3. AUDIO BLOCK DIAGRAM

8. SCHEMATIC DIAGRAMS

8.1. POWER TRANSFORMER SECTION IN MAIN SCHEMATIC DIAGRAM

8.2. POWER SUPPLY/ RF SECTION IN MAIN SCHEMATIC DIAGRAM

8.3. TIMER SECTION IN MAIN SCHEMATIC DIAGRAM

8.4. SYSTEM CONTROL & SERVO SECTION IN MAIN SCHEMATIC DIAGRAM

8.5. LUMINANCE & CHROMINANCE/ AUDIO SECTION IN MAIN SCHEMATIC DIAGRAM

8.6. Hi-Fi AUDIO SECTION IN MAIN SCHEMATIC DIAGRAM

8.7. DECODER SECTION IN MAIN SCHEMATIC DIAGRAM (NV-HV60GL)

8.8. FRONT SCHEMATIC DIAGRAM

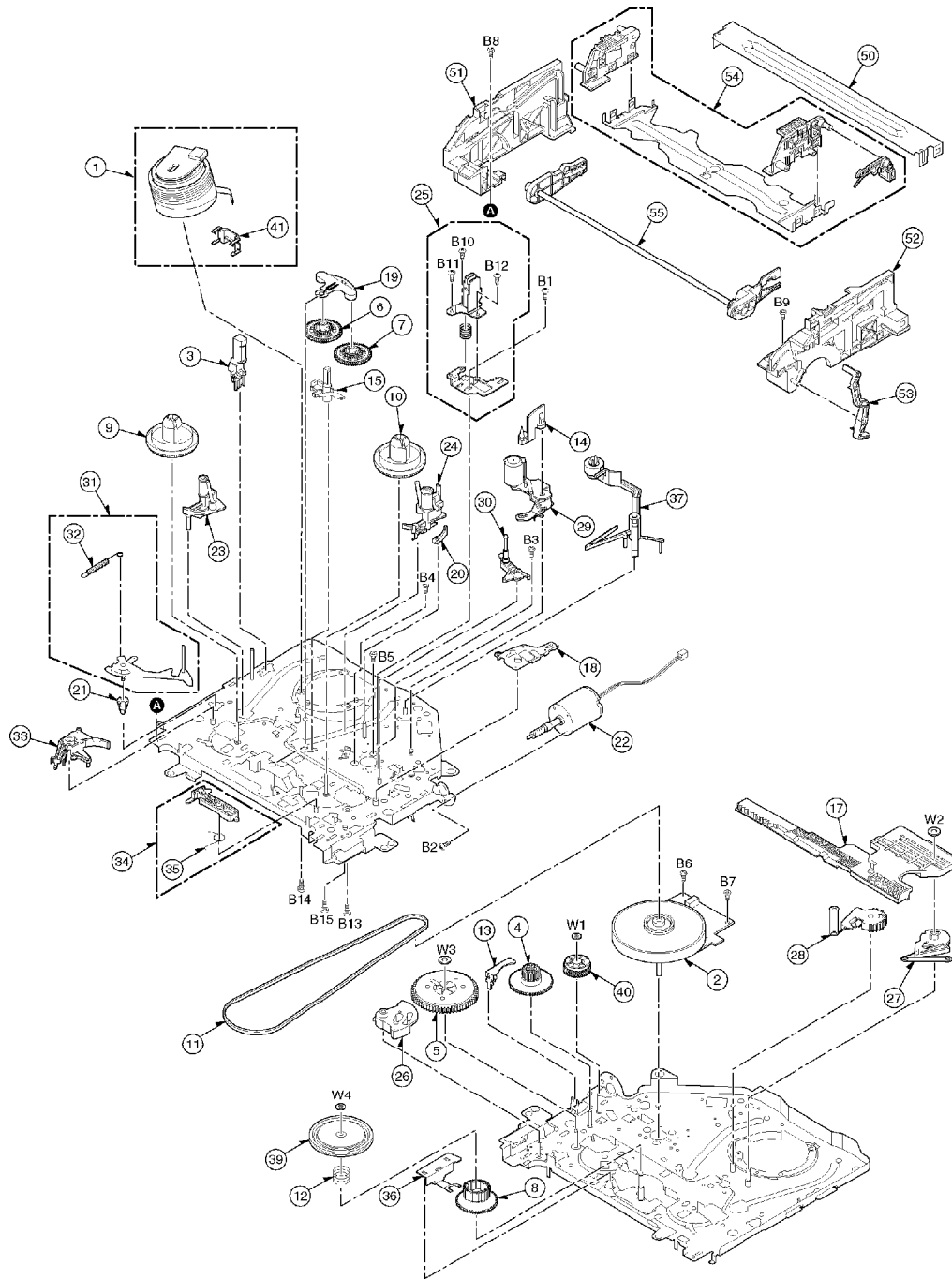
9. CIRCUIT BOARD ASSEMBLIES

9.1. MAIN C.B.A.

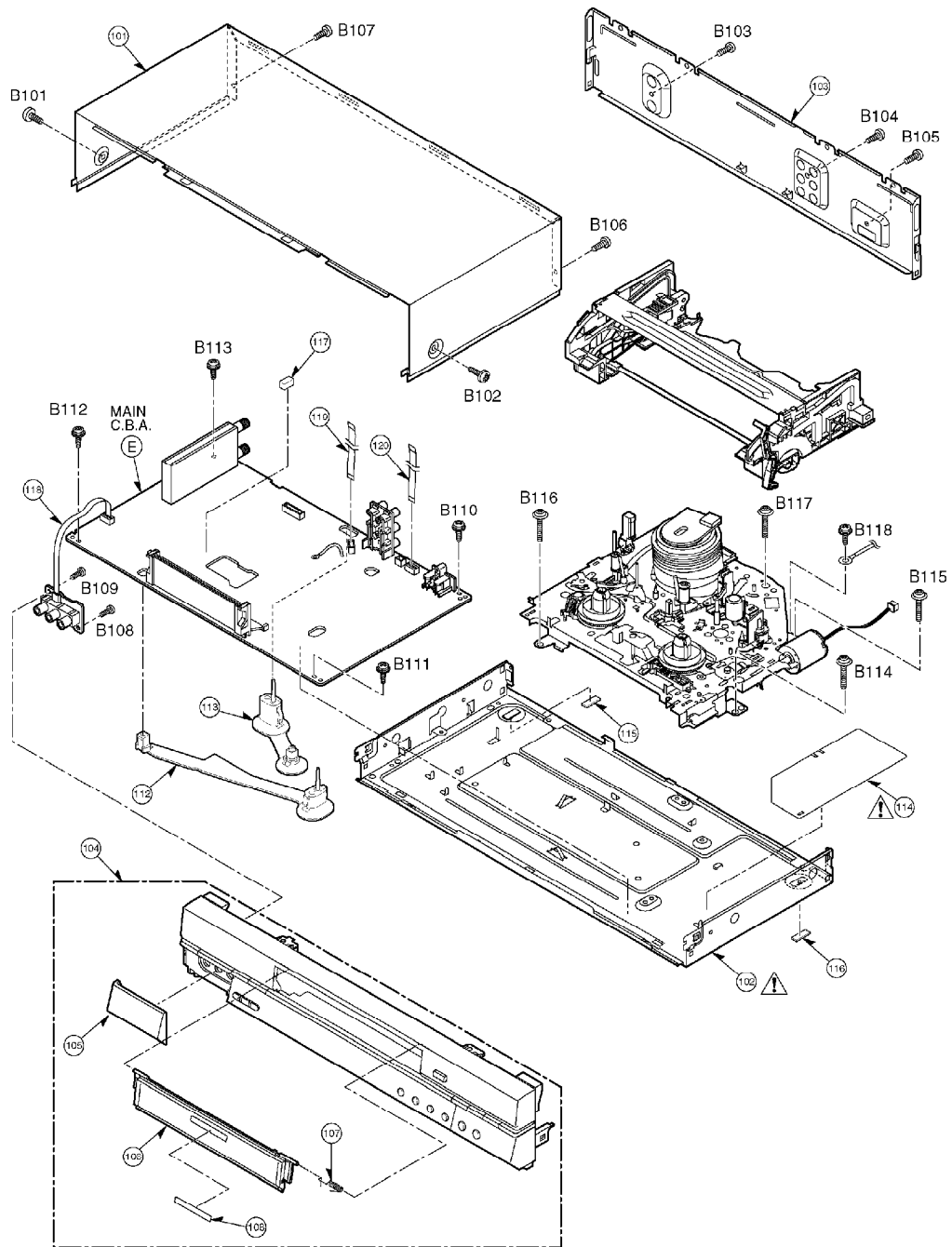
9.2. FRONT C.B.A.

10. EXPLODED VIEWS

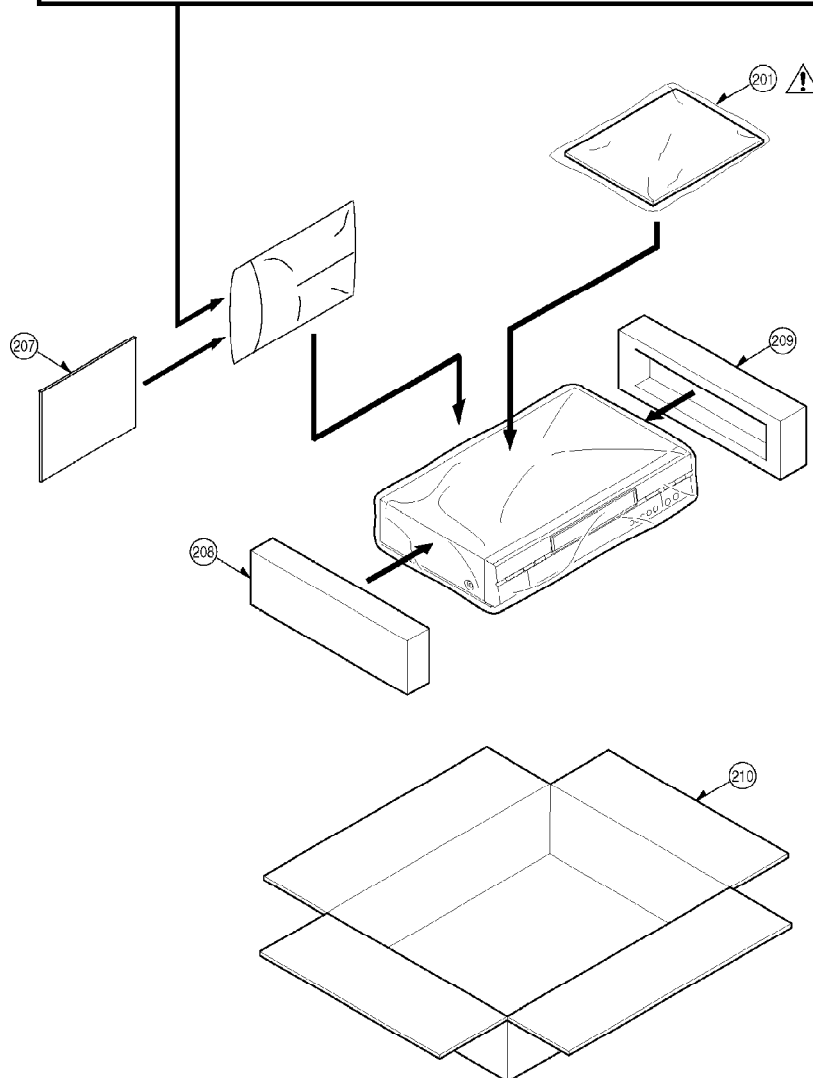
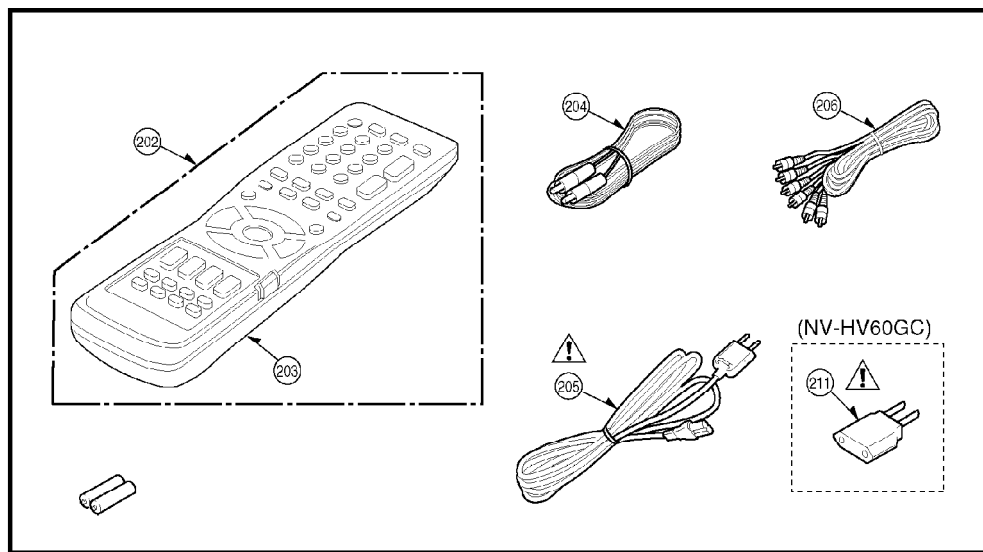
10.1. CHASSIS PARTS SECTION



10.2. CASING PARTS SECTION



10.3. PACKING PARTS SECTION



11. REPLACEMENT PARTS LIST

11.1. CHASSIS PARTS SECTION / PARTS LIST

Note:

***All parts except parts mentioned [AVC-SPC] in the Remarks column are supplied from MAV.
Parts mentioned [AVC-SPC] are supplied from PAVC-CSG (AVC-SPC).**

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark Δ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
<u>1</u>	VEG1612-DKIT	CYLINDER UNIT	
<u>2</u>	VEM0750	CAPSTAN UNIT	
<u>3</u>	L1AZ00000004	FE HEAD	
<u>4</u>	VDG1510	INTERMEDIATE GEAR	
<u>5</u>	VDG1511	MAIN CAM GEAR	
<u>6</u>	VDG1512	IDLER GEAR	
<u>7</u>	VDG1512	IDLER GEAR	
<u>8</u>	VDG1514	CHANGE GEAR	
<u>9</u>	VDR0372	REEL TABLE	
<u>10</u>	VDR0372	REEL TABLE	
<u>11</u>	VDV0391	CAPSTAN BELT	
<u>12</u>	VMB3550	CHANGE GEAR SPRING	
<u>13</u>	VMD4249	WORM SHAFT HOLDER	
<u>14</u>	VMD4252	OPENER PIECE	
<u>15</u>	VMD4253	LED PRISM	
<u>17</u>	VML3624	MAIN LEVER	
<u>18</u>	VML3626	PINCH CHARGE ARM	
<u>19</u>	VML3632	IDLER ARM	
<u>20</u>	VMX3092	P4 CAP	
<u>21</u>	VDB1431	TENSION ARM BOSH	
<u>22</u>	VEM0785	LOADING MOTOR UNIT	
<u>23</u>	VXA7105	SUPPLY SHAFT HOLDER UNIT	
<u>24</u>	VXA7106	TAKE UP SHAFT HOLDER UNIT	
<u>25</u>	VXA7107	AC HEAD UNIT	
<u>26</u>	VXA7311	SECTOR GEAR UNIT	
<u>27</u>	VXL3107	SUPPLY LOADING ARM UNIT	
<u>28</u>	VXL3108	TAKE UP LOADING ARM UNIT	
<u>29</u>	VXL3109	PINCH ARM UNIT	
<u>30</u>	VXL3110	P5 ARM UNIT	
<u>31</u>	VXL3111	TENSION ARM UNIT	
<u>32</u>	VMB3547	TENSION SPRING	
<u>33</u>	VXL3112	SUPPLY BRAKE ARM UNIT	
<u>34</u>	VXL3113	TAKE UP BRAKE ARM UNIT	
<u>35</u>	VMB3548	TAKE UP BRAKE SPRING	
<u>36</u>	VXL3124	CHANGE LEVER UNIT	
<u>37</u>	VXL3131	CLEANER ARM UNIT	
<u>39</u>	VXP2133	CENTRE CLUTCH UNIT	
<u>40</u>	VXP2168	TORQUE CLUTCH UNIT	
<u>41</u>	VMD4770	FLAT CABLE HOLDER	
<u>50</u>	VMA0L25	TOP PLATE	
<u>51</u>	VMD4255	SIDE PLATE (L)	
<u>52</u>	VMD4254	SIDE PLATE (R) UNIT	
<u>53</u>	VML3706	OPENER LEVER	
<u>54</u>	VXA7110	CASSETTE HOLDER UNIT	

Ref. No.	Part No.	Part Name & Description	Remarks
<u>55</u>	VXL3160	MAIN SHAFT UNIT	
<u>B1</u>	VHD1044	SCREW	
<u>B2</u>	XSN3+35	SCREW	
<u>B3</u>	XTN26+7J	SCREW	
<u>B4</u>	XTN26+7J	SCREW	
<u>B5</u>	XTN26+7J	SCREW	
<u>B6</u>	XTV26+5F	SCREW	
<u>B7</u>	XTV26+5F	SCREW	
<u>B8</u>	XTV26+8FR	SCREW	
<u>B9</u>	XTV26+8FR	SCREW	
<u>B10</u>	VHD1066	SCREW	
<u>B11</u>	VHD1066	SCREW	
<u>B12</u>	VHD1185	SCREW	
<u>B13</u>	VHD1095	SCREW	
<u>B14</u>	VHD1117	SCREW	
<u>B15</u>	VHD1117	SCREW	
<u>W1</u>	VMX2208	WASHER	
<u>W2</u>	VMX3114	WASHER	
<u>W3</u>	VMX2699	WASHER	
<u>W4</u>	VMX3196	WASHER	

11.2. CASING PARTS SECTION / PARTS LIST

Note:

***All parts except parts mentioned [SVC-SPC] in the Remarks column are supplied from MAV.
Parts mentioned [AVC-SPC] are supplied from PAVC-CSG (AVC-SPC).**

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark  have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
101	VGM1991	TOP PANEL	
102	VMP7569	CHASSIS FRAME	
103	VMP7574	BACK PANEL	
104	VYP8706	FRONT PANEL (1) UNIT	NV-HV60GL
104	VYP8708	FRONT PANEL (1) UNIT	NV-HV60GC/GCS/GM
105	VKF3672	DOOR	
106	VKF3716	BLINDER PANEL	
107	VMB2521	BLINDER SPRING	
108	VGB0554	SUPER DRIVE BADGE	
112	VMX3115	MECHANISM SPACER (F)	
113	VMX3272	MECHANISM SPACER (R)	
114	VMZ3355	BARRIER	
115	VKA0364	FOOT	
116	VKA0364	FOOT	
117	VMX3277	SPACER	
118	VWJ05OW120BB	FLAT CARD CABLE (5P)	P3301-P4951
119	VWJ1652	FLAT CARD CABLE (6P)	P4002-AC HEAD
120	VWJ07OW200MM	FLAT CARD CABLE (7P)	P2501-CYLINDER
B101	XTW3+10TFC	SCREW	
B102	XTW3+10TFC	SCREW	
B103	XSB3+5FC	SCREW	
B104	XTB3+10JFC	SCREW	
B105	XTB3+10JFC	SCREW	
B106	XTB3+10JFC	SCREW	
B107	XTB3+10JFC	SCREW	
B108	XTN26+8JR	SCREW	
B109	XTN26+8JR	SCREW	
B110	XTW3+6TR	SCREW	
B111	XTW3+6TR	SCREW	
B112	XTW3+6TR	SCREW	
B113	XTW3+6TR	SCREW	
B114	VHD1453	SCREW	
B115	VHD1453	SCREW	
B116	VHD1453	SCREW	
B117	VHD1452	SCREW	
B118	XTV26+5TR	SCREW	

11.3. PACKING PARTS SECTION / PARTS LIST

Note:

*All parts except parts mentioned [AVC-SPC] in the Remarks column are supplied from MAV.
Parts mentioned [AVC-SPC] are supplied from PAVC-CSG (AVC-SPC).

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark  have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
201	VQT0B18	OPERATING INSTRUCTIONS	 NV-HV60GL
		(ENGLISH)	
201	VQT0C22	OPERATING INSTRUCTIONS	 NV-HV60GC/GCS
		(ENGLISH/ARABIC)	
201	VQT0C23	OPERATING INSTRUCTIONS (ENGLISH)	 NV-HV60GM
202	N2QAKB000045	REMOTE CONTROLLER	
203	R0186-720010	BATTERY COVER	
204	VJA1124	DIN RF CABLE	NV-HV60GL
205	RJA0035-2X	AC CORD	 NV-HV60GL
205	RJA0019-2X	AC CORD	 NV-HV60GC/GCS/GM
206	K2KA6BA00003	PHONE CABLE	
207	VPN5766	ACCESSORY PAD	
208	VPN5970	CUSHION (L)	
209	VPN5971	CUSHION (R)	
210	VPG0R65	PACKING	NV-HV60GL
210	VPG0R67	PACKING	NV-HV60GC
210	VPG0S65	PACKING	NV-HV60GCS
210	VPG0S80	PACKING	NV-HV60GM
211	VJP2974-M	AC PLUG ADAPTER	 NV-HV60GC
	-----	SERVICE FIXTURES & TOOLS	
	VFJ8125H3F	VHS ALIGNMENT TAPE (PAL)	PAVC-SPC
	VFK0335	RETAINING RING REMOVER	PAVC-SPC
		(3MM/4MM)	
	VFK0329	POST ADJUSTMENT	PAVC-SPC
		SCREWDRIVER	
	VFK0326	HEX WRENCH SET	PAVC-SPC
	VFK0132	BACK TENSION METER	PAVC-SPC
	VFK27	HEAD CLEANING STICK	PAVC-SPC
	VFK1024	MOLYTONE GREASE	PAVC-SPC
	VFK0330	FINE ADJUSTMENT GEAR	PAVC-SPC
		DRIVER	
	VFK1301	SILICONE GREASE	PAVC-SPC
	VFK1298A	FLOIL GREASE	PAVC-SPC

11.4. ELECTRICAL PARTS LIST

Note1:

*All parts except parts mentioned [AVC-SPC] in the Remarks column are supplied from MAV.
Parts mentioned [AVC-SPC] are supplied from PAVC-CSG (AVC-SPC).

Note2:

“*1”, “*2” in the Remarks column shows the models as follows.

“*1” : NV-HV60GC-S/GCS-S/GM-S

“*2” : NV-HV60GL-S

Note: 1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE: Components identified with the mark  have the special characteristics for safety. When replacing any of these components, use only the same type.
3. Unless otherwise specified.
All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICROFARADS (uf), P=auF.
4. The P.C. Board units marked with  show below the main assembled parts.
5. The marking (RTL) indicates the retention time is limited for this item.
After the discontinuation of this assembly in production, it will no longer be available.

Ref. No.	Part No.	Part Name & Description	Remarks
	VEP06F33C	MAIN C.B.A.	(RTL) *1
			THE FOLLOWING C.B.A. IS INCLUDED IN MAIN C.B.A.
			VEP04831A
	VEP06F33D	MAIN C.B.A.	(RTL) *2
			THE FOLLOWING C.B.A. IS INCLUDED IN MAIN C.B.A.
			VEP04831A
	VEP04831A	FRONT C.B.A.	(RTL) *1,*2
			INCLUDED IN MAIN C.B.A.(VEP06F33C/D).
	VEP06F33C	MAIN C.B.A.	(RTL) *1
	VEP06F33D	MAIN C.B.A.	(RTL) *2
B7751	VSB0205	LITHIUM BATTERY	
C1121	ECQU2A333MVA	P.CAPACITOR	 *1
C1121	ECQU2A683MVA	P.CAPACITOR	 *2
C1122	F1BAF331A013	C.CAPACITOR	
C1123	F1BAF1020020	C.CAPACITOR	
C1143	ECEC2GG680FZ	E.CAPACITOR	
C1151	ECQB1H473JF3	P.CAPACITOR	
C1152	ECQB1H103JF3	P.CAPACITOR	
C1153	ECQB1H104JM3	P.CAPACITOR	
C1154	ECQB1H223JM3	P.CAPACITOR	
C1155	F1A3A271A028	C.CAPACITOR	
C1200	ECQB1H104JM3	P.CAPACITOR	
C1210	F1B3A332A004	C.CAPACITOR	
C1230	EEUFG1H560B	E.CAPACITOR	
C1250	F2A1C6810023	E.CAPACITOR	
C1251	ECA1CM470B	E.CAPACITOR	
C1260	F2A1A1020056	E.CAPACITOR	
C1261	ECA1AM101B	E.CAPACITOR	
C1270	EEUFG1H560B	E.CAPACITOR	
C1280	EEUFG1A101B	E.CAPACITOR	
C1341	F1H1H103A730	C.CAPACITOR	
C1351	F1H1H103A730	C.CAPACITOR	
C1352	ECEA0JKA470B	E.CAPACITOR	
C2001	ECJ1VC1H330J	C.CAPACITOR CHIP	

Ref. No.	Part No.	Part Name & Description	Remarks
C2003	ECJ1VF1A105Z	C.CAPACITOR CHIP	
C2051	ECEA0JKN220B	E.CAPACITOR	
C2053	ECEA1CKA100B	E.CAPACITOR	
C2054	ECJ1VB1H392K	C.CAPACITOR CHIP	
C2055	ECUV1C104ZFV	C.CAPACITOR CHIP	
C2099	ECJ1VC1H681J	C.CAPACITOR CHIP	
C2501	ECUV1C104ZFV	C.CAPACITOR CHIP	
C2502	ECEA0JKA221B	E.CAPACITOR	
C2504	F1H1E223A064	C.CAPACITOR	
C2505	F1H1E223A064	C.CAPACITOR	
C2506	F1H1A224A025	C.CAPACITOR	
C2507	ECJ1VB1H102K	C.CAPACITOR CHIP	
C2508	ECJ1VB1H182K	C.CAPACITOR CHIP	
C2509	ECEA1CKA220B	E.CAPACITOR	
C2510	F1H1C104A075	C.CAPACITOR	
C2511	F1H1C104A075	C.CAPACITOR	
C2512	F1H1C104A075	C.CAPACITOR	
C2513	ECJ1VF1A105Z	C.CAPACITOR CHIP	
C2515	F1H1H103A730	C.CAPACITOR	
C2518	ECJ1VB1H102K	C.CAPACITOR CHIP	
C2519	F1H1H103A730	C.CAPACITOR	
C2520	F1H1C104A075	C.CAPACITOR	
C2551	ECJ1VB1C563K	C.CAPACITOR CHIP	
C2552	ECJ1VB1C563K	C.CAPACITOR CHIP	
C2561	ECJ1VB1C563K	C.CAPACITOR CHIP	
C2562	ECJ1VB1C563K	C.CAPACITOR CHIP	
C2571	ECA1EM221B	E.CAPACITOR	
C3002	F1H1C104A075	C.CAPACITOR	
C3003	F1H1C104A075	C.CAPACITOR	
C3004	ECJ1VC1H151J	C.CAPACITOR CHIP	
C3005	F1H1C104A075	C.CAPACITOR	
C3006	F1J1C105A112	C.CAPACITOR	
C3007	F1H1H390A765	C.CAPACITOR	
C3008	ECEA1HKA4R7B	E.CAPACITOR	
C3009	F1J1C105A112	C.CAPACITOR	
C3010	F1J1C105A112	C.CAPACITOR	
C3011	ECEA0JKA470B	E.CAPACITOR	
C3012	F1H1A224A025	C.CAPACITOR	
C3013	F1H1C104A075	C.CAPACITOR	
C3015	F1H1C104A075	C.CAPACITOR	
C3016	F1H1A105A025	C.CAPACITOR	
C3017	F1H1C104A075	C.CAPACITOR	
C3019	F1H1C104A075	C.CAPACITOR	
C3020	ECEA1EKA3R3B	E.CAPACITOR	
C3021	ECEA1CKA100B	E.CAPACITOR	
C3022	F1H1H103A748	C.CAPACITOR	
C3025	ECJ1VC1H331J	C.CAPACITOR CHIP	
C3027	ECJ2VB1H103K	C.CAPACITOR CHIP	
C3029	F1H1H103A730	C.CAPACITOR	
C3030	F1H1H103A730	C.CAPACITOR	
C3031	F1H1A224A025	C.CAPACITOR	
C3032	ECEA0JKA470B	E.CAPACITOR	
C3033	F1J1C105A112	C.CAPACITOR	
C3034	ECJ1VC1H020C	C.CAPACITOR CHIP	

Ref. No.	Part No.	Part Name & Description	Remarks
C3035	F1H1C104A075	C.CAPACITOR	
C3036	ECEA1EKA3R3B	E.CAPACITOR	
C3037	ECEA1HKA2R2B	E.CAPACITOR	
C3038	ECJ1VB1H472K	C.CAPACITOR CHIP	
C3039	F1H1H103A748	C.CAPACITOR	
C3040	F1H1A474A025	C.CAPACITOR	
C3041	F1H1E223A064	C.CAPACITOR	
C3042	ECEA1EKA4R7B	E.CAPACITOR	
C3046	ECEA1HKA010B	E.CAPACITOR	*1
C3047	ECUV1C104ZFV	C.CAPACITOR CHIP	
C3048	F1H1C104A075	C.CAPACITOR	
C3049	F1H1C104A075	C.CAPACITOR	
C3050	ECEA1CKA470B	E.CAPACITOR	
C3051	ECA0JM471B	E.CAPACITOR	
C3052	F1H1C104A075	C.CAPACITOR	
C3053	ECEA1CKA100B	E.CAPACITOR	
C3059	ECJ1VB1H102K	C.CAPACITOR CHIP	
C3062	ECEA1CKA100B	E.CAPACITOR	
C3064	F1J1C105A112	C.CAPACITOR	
C3065	F1H1C104A075	C.CAPACITOR	
C3066	F1H1C104A075	C.CAPACITOR	
C4010	ECEA1CKA100B	E.CAPACITOR	
C4011	-----	WIRE CABLE	
C4018	ECEA0JKA220B	E.CAPACITOR	
C4041	ECEA1EKA4R7B	E.CAPACITOR	
C4042	ECEA1EKA4R7B	E.CAPACITOR	
C4061	ECJ1VB1H682K	C.CAPACITOR CHIP	
C4062	ECEA1CKA100B	E.CAPACITOR	
C4063	ECEA1HKA3R3B	E.CAPACITOR	
C4064	ECJ1VB1H182K	C.CAPACITOR CHIP	
C4065	ECJ1VB1H182K	C.CAPACITOR CHIP	
C4066	F1H1H222A219	C.CAPACITOR	
C4075	ECJ1VC1H471J	C.CAPACITOR CHIP	
C4076	ECJ1VC1H471J	C.CAPACITOR CHIP	
C4081	ECQB1H223JM3	P.CAPACITOR	
C4082	ECJ1VB1H471K	C.CAPACITOR CHIP	
C4083	ECEA0JKA470B	E.CAPACITOR	
C4084	ECJ2VB1H182K	C.CAPACITOR CHIP	
C4085	F1H1E223A064	C.CAPACITOR	
C4502	ECEA1CKA100B	E.CAPACITOR	
C4503	ECEA1CKA100B	E.CAPACITOR	
C4504	ECEA1CKA100B	E.CAPACITOR	
C4505	ECEA0JKA330B	E.CAPACITOR	
C4506	ECEA1CKA100B	E.CAPACITOR	
C4507	ECEA0JKA220B	E.CAPACITOR	
C4508	ECJ1VB1C333K	C.CAPACITOR CHIP	
C4509	F1H1H103A730	C.CAPACITOR	
C4510	F1H1H103A730	C.CAPACITOR	
C4511	F1H1C104A075	C.CAPACITOR	
C4512	F1H1A224A025	C.CAPACITOR	
C4513	ECEA0JKA220B	E.CAPACITOR	
C4514	ECEA1CKA100B	E.CAPACITOR	
C4515	ECEA0JKA330B	E.CAPACITOR	
C4516	ECEA1CKA100B	E.CAPACITOR	

Ref. No.	Part No.	Part Name & Description	Remarks
C4517	ECEA0JKA101B	E.CAPACITOR	
C4519	ECEA1CKA100B	E.CAPACITOR	
C4520	ECEA1CKA100B	E.CAPACITOR	
C4521	ECEA1CKA100B	E.CAPACITOR	
C4522	ECEA0JKA220B	E.CAPACITOR	
C4523	F1H1H103A730	C.CAPACITOR	
C4524	F1H1C104A075	C.CAPACITOR	
C4525	ECEA1CKA470B	E.CAPACITOR	
C4527	ECEA1CKA100B	E.CAPACITOR	
C4530	ECJ1VC1H151J	C.CAPACITOR CHIP	
C4531	ECJ1VC1H151J	C.CAPACITOR CHIP	
C4534	ECQB1H153JM3	P.CAPACITOR	
C4535	ECQB1H153JM3	P.CAPACITOR	
C4536	F1H1H103A730	C.CAPACITOR	
C4537	ECJ2VC1H560G	C.CAPACITOR CHIP	
C4538	F1H1H103A730	C.CAPACITOR	
C4581	ECQB1H473JF3	P.CAPACITOR	
C4582	ECQB1H473JF3	P.CAPACITOR	
C4583	F1H1H103A730	C.CAPACITOR	
C4591	ECJ1VB1H102K	C.CAPACITOR CHIP	*1
C4601	ECEA1CKA100B	E.CAPACITOR	
C4603	F1H1H152A219	C.CAPACITOR	
C5001	F1H1H103A748	C.CAPACITOR	
C5002	F1H1H103A748	C.CAPACITOR	
C5003	F1H1H103A748	C.CAPACITOR	
C5004	F1H1H103A748	C.CAPACITOR	
C5005	ECEA0JKA101B	E.CAPACITOR	
C5006	F1H1C104A075	C.CAPACITOR	
C6001	F1H1H180A765	C.CAPACITOR	
C6002	ECJ1VC1H220J	C.CAPACITOR CHIP	
C6003	F1H1H150A765	C.CAPACITOR	
C6004	ECJ1VC1H220J	C.CAPACITOR CHIP	
C6005	ECEA1HKA3R3B	E.CAPACITOR	
C6006	ECJ1VC1H101J	C.CAPACITOR CHIP	
C6007	ECJ1VC1H820J	C.CAPACITOR CHIP	
C6008	ECJ1VC1H471J	C.CAPACITOR CHIP	
C6009	F1H1H103A730	C.CAPACITOR	
C6010	F1H1H103A730	C.CAPACITOR	
C6011	F1H1H103A730	C.CAPACITOR	
C6013	ECJ1VF1A105Z	C.CAPACITOR CHIP	
C6014	ECJ1VB1H102K	C.CAPACITOR CHIP	
C6015	ECJ1VB1C333K	C.CAPACITOR CHIP	
C6016	ECJ1VB1H102K	C.CAPACITOR CHIP	
C6017	ECJ1VC1H471J	C.CAPACITOR CHIP	
C6020	ECJ1VB1H102K	C.CAPACITOR CHIP	
C6021	F1H1H103A730	C.CAPACITOR	
C6022	F1H1H103A730	C.CAPACITOR	
C6101	ECJ2VF1H104Z	C.CAPACITOR CHIP	
C6102	F1H1H103A730	C.CAPACITOR	
C6103	F1H1H103A730	C.CAPACITOR	
C6109	ECUV1C104ZFV	C.CAPACITOR CHIP	
C6111	ECUV1C104ZFV	C.CAPACITOR CHIP	
C6112	ECJ1VC1H330J	C.CAPACITOR CHIP	
C6113	ECJ1VC1H330J	C.CAPACITOR CHIP	

Ref. No.	Part No.	Part Name & Description	Remarks
C6301	F1H1H103A730	C.CAPACITOR	
C6302	F1H1H103A730	C.CAPACITOR	
C6303	ECEA0JKA470B	E.CAPACITOR	
C6305	ECEA1EKA4R7B	E.CAPACITOR	
C6307	F1H1H103A730	C.CAPACITOR	
C6308	ECEA0JKA470B	E.CAPACITOR	
C6309	ECEA0JKA470B	E.CAPACITOR	
C6310	F1H1H103A730	C.CAPACITOR	
C7301	F1H1H103A730	C.CAPACITOR	*2
C7303	ECEA0JKA101B	E.CAPACITOR	*2
C7304	ECUV1C104ZFV	C.CAPACITOR CHIP	*2
C7305	ECEA0JKA101B	E.CAPACITOR	*2
C7312	ECEA1CKA100B	E.CAPACITOR	*2
C7313	ECEA1CKA100B	E.CAPACITOR	*2
C7315	ECUV1A474KBV	C.CAPACITOR CHIP	*2
C7316	ECJ1VB1H472K	C.CAPACITOR CHIP	*2
C7317	ECEA1CKA470B	E.CAPACITOR	*2
C7318	ECEA1CKA100B	E.CAPACITOR	*2
C7319	F1H1H152A219	C.CAPACITOR	*2
C7320	F1H1H152A219	C.CAPACITOR	*2
C7321	F1H1H152A219	C.CAPACITOR	*2
C7324	F1H1H103A748	C.CAPACITOR	*2
C7325	F1H1H103A748	C.CAPACITOR	*2
C7326	ECUV1A474KBV	C.CAPACITOR CHIP	*2
C7327	ECJ1VB1E123K	C.CAPACITOR CHIP	*2
C7328	ECJ1VC1H681J	C.CAPACITOR CHIP	*2
C7329	ERJ3GEY0R00V	M.RESISTOR CHIP	*2
C7330	ECJ1VC1H681J	C.CAPACITOR CHIP	*2
C7331	ECJ1VB1E123K	C.CAPACITOR CHIP	*2
C7333	ECUV1A474KBV	C.CAPACITOR CHIP	*2
C7335	ECUV1C104ZFV	C.CAPACITOR CHIP	*2
C7336	F1H1C104A075	C.CAPACITOR	*2
C7337	ECUV1A474KBV	C.CAPACITOR CHIP	*2
C7338	ECUV1A474KBV	C.CAPACITOR CHIP	*2
C7501	ECEA1VKA100B	E.CAPACITOR	
C7502	ECJ1VC1H100D	C.CAPACITOR CHIP	
C7505	ECEA0JKA101B	E.CAPACITOR	
C7506	ECUV1C104ZFV	C.CAPACITOR CHIP	
C7601	ECEA1HKA010B	E.CAPACITOR	
C7603	F1H1H103A730	C.CAPACITOR	
C7605	ECEA0JKA470B	E.CAPACITOR	
C7608	F1H1H103A730	C.CAPACITOR	
C7610	ECJ1VB1H102K	C.CAPACITOR CHIP	
C7616	ECEA0JKA470B	E.CAPACITOR	
C7617	F1H1H103A730	C.CAPACITOR	
C7618	ECEA0JKA470B	E.CAPACITOR	
C7619	F1H1H103A730	C.CAPACITOR	
C7621	ECJ1VB1H471K	C.CAPACITOR CHIP	
C7622	ECJ1VB1H471K	C.CAPACITOR CHIP	
C7623	F1H1H103A730	C.CAPACITOR	
C7709	ECJ1VB1H182K	C.CAPACITOR CHIP	
C7714	ECJ1VC1H101J	C.CAPACITOR CHIP	*1
C7752	ECEA0JKA331Q	E.CAPACITOR	

Ref. No.	Part No.	Part Name & Description	Remarks
D1110	ERZVA5Z471	TRANSIENT/SURGE ABSORBER	
D1140	B0KB00000013	DIODE	
D1151	B0HAGM000006	DIODE	
D1152	MA2C18500E	DIODE	
D1155	MA2C165001VT	DIODE	
D1157	MAZ40270LF	DIODE	
D1180	MA7510-TR	DIODE	
D1230	MA2C18500E	DIODE	
D1250	B0JAMK000015	DIODE	
D1251	B0JAMK000015	DIODE	
D1260	B0JAME000025	DIODE	
D1261	B0JAME000025	DIODE	
D1270	MA2C18500E	DIODE	
D1280	B0JAME000025	DIODE	
D1351	MAZ4056NHF	DIODE	
D1501	B3EA00000072	LED	
D2001	MA2C165001VT	DIODE	
D2002	MA2C165001VT	DIODE	
D2501	-----	WIRE CABLE	
D2503	MAZ4160NMF	DIODE	
D4501	MA2C165001VT	DIODE	
D6302	B0JACE000001	DIODE	
D6303	MAZ4130NLF	DIODE	
D6305	MAZ4062NLF	DIODE	
D6306	MAZ4056NHF	DIODE	
D6307	MAZ4056NHF	DIODE	
D7501	MAZ4220N0F	DIODE	
D7602	MAZ4300NMF	DIODE	
D7751	B0JACE000001	DIODE	
D7752	MA2C700A0F	DIODE	
D7753	MA2C165001VT	DIODE	
D7754	B0JACE000001	DIODE	
DP7501	A2BA00000211	DISPLAY TUBE	
F1101	K5D162BK0005	FUSE	
IC1200	C0DAEJC00003	IC	
IC1511	B3NAA0000049	IC	
IC1512	B3NAA0000049	IC	
IC2501	C1AB00001767	IC	
IC2502	C0DBZJG00005	IC	
IC3001	C1AB00001739	IC	
IC4501	AN3656NFBPBV	IC	
IC6001	C2CBHF000252	IC	*1
IC6001	C2CBHF000253	IC	*2
IC6201	C0EBH0000172	IC	
IC6301	C0DBCHD00002	IC	
IC7301	C1AB00001403	IC	*2
IC7501	C0HBB0000023	IC	

Ref. No.	Part No.	Part Name & Description	Remarks
IR7501	PNA4618M09VT	IR RECEIVER	
J1	VEE0X50	EARTH WIRE	
JK3201	K2HA612B0035	JACK	
JK4951	K2HA307A0003	JACK	
K3001	ERJ3GEY0R00V	M.RESISTOR CHIP	
K3010	ERJ3GEY0R00V	M.RESISTOR CHIP	
K6006	F1H1H103A730	C.CAPACITOR	
K6012	ERJ3GEY0R00V	M.RESISTOR CHIP	*2
K7302	ERJ3GEY0R00V	M.RESISTOR CHIP	*2
K7304	ERJ3GEY0R00V	M.RESISTOR CHIP	*2
K7305	ERJ3GEY0R00V	M.RESISTOR CHIP	*2
K7502	ERJ3GEY0R00V	M.RESISTOR CHIP	
K7503	ERJ3GEY0R00V	M.RESISTOR CHIP	
K7616	ERJ3GEYJ221V	M.RESISTOR CHIP	
L1120	ELF15N003A	LINE FILTER	 *1
L1120	ELF15N005A	LINE FILTER	 *2
L1121	ELF15N005A	LINE FILTER	 *2
L1250	G0A220G00018	COIL	
L1260	G0A220G00018	COIL	
L2501	-----	WIRE CABLE	
L3001	G0C271JA0019	INDUCTOR	
L3004	G1C120J00001	INDUCTOR	
L3301	G0C150JA0019	INDUCTOR	
L3302	G0C680JA0019	INDUCTOR	
L3303	G0C330JA0019	INDUCTOR	
L3304	G0C680JA0019	INDUCTOR	
L4081	G0C471KA0004	INDUCTOR	
L4501	G0C1R2J00004	INDUCTOR	
L4502	G0C391JA0019	INDUCTOR	
L5001	G0C560JA0019	INDUCTOR	
L6001	G0C5R6JA0019	INDUCTOR	
L6002	-----	WIRE CABLE	
L6004	-----	WIRE CABLE	
L7301	-----	WIRE CABLE	*2
L7302	-----	WIRE CABLE	*2
L7303	-----	WIRE CABLE	*2
L7601	G0C100JA0030	INDUCTOR	
L7602	-----	WIRE CABLE	*2
L7603	-----	WIRE CABLE	
L7605	VLQ0822J100T	COIL	
L7608	G0C270JA0030	INDUCTOR	
L7610	VLQ0822J100T	COIL	
L7702	G0C100JA0019	INDUCTOR	*1
LB1120	J0JKB0000028	FILTER	
LB1121	-----	WIRE CABLE	
LB1210	-----	WIRE CABLE	
LB4073	D0GDR00JA017	M.RESISTOR	
LB4074	D0GDR00JA017	M.RESISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
LB4077	ERJ3GEY0R00V	M.RESISTOR CHIP	
LB4078	ERJ3GEY0R00V	M.RESISTOR CHIP	
LB4079	D0GDR00JA017	M.RESISTOR	
LB4901	ERJ3GEY0R00V	M.RESISTOR CHIP	
LB4902	ERJ3GEY0R00V	M.RESISTOR CHIP	
LB7601	J0JBC0000015	INDUCTOR	
LR1150	J1ZZA0000001	FILTER	
P1101	K2AA2H000007	AC INLET	
P1531	K1KA02A00375	CONNECTOR	
P2501	VJS3538A007W	CONNECTOR	
P2571	K1KA08A00290	CONNECTOR	
P3301	VJS3538A005W	CONNECTOR	
P4001	K1MZ02A00003	CONNECTOR	
P4002	VJS3538A006W	CONNECTOR	
P4951	K1MN05B00039	CONNECTOR	
P5001	K1MN10A00036	CONNECTOR	
Q1150	B1DEDR000003	TRANSISTOR	
Q1151	2SC3311ASA	TRANSISTOR	
Q1152	2SC3311ASA	TRANSISTOR	
Q1153	B1DEDQ000014	TRANSISTOR	
Q1200	PS2561L2-1W	TRANSISTOR	
Q1341	B1AAGD000006	TRANSISTOR	
Q1342	2SD0601A0L	TRANSISTOR	
Q1351	B1AAGD000006	TRANSISTOR	
Q1352	B1AAGD000006	TRANSISTOR	
Q1354	B1AAGD000006	TRANSISTOR	
Q1501	PNA2604M01VT	PHOTO TRANSISTOR	
Q1502	PNA2604M01VT	PHOTO TRANSISTOR	
Q3001	2SD0601A0L	TRANSISTOR	
Q3003	2SB0709A0L	TRANSISTOR	
Q3202	2SB0709A0L	TRANSISTOR	
Q4081	2SD0602ARL	TRANSISTOR	
Q4082	2SD114900L	TRANSISTOR	
Q4083	2SD0601A0L	TRANSISTOR	
Q4084	2SB0710A0L	TRANSISTOR	
Q6305	2SD0601A0L	TRANSISTOR	
Q6306	2SD0601A0L	TRANSISTOR	
Q6307	B1AAGD000006	TRANSISTOR	
Q7701	2SB0709A0L	TRANSISTOR	*1
QR1342	UNR211200L	TRANSISTOR RESISTOR	
QR3001	UNR221300L	TRANSISTOR RESISTOR	
QR3004	UNR221300L	TRANSISTOR RESISTOR	
QR3008	UNR221300L	TRANSISTOR RESISTOR	
QR4061	UNR221100L	TRANSISTOR RESISTOR	
QR4081	UNR211100L	TRANSISTOR RESISTOR	
QR4082	UNR221300L	TRANSISTOR RESISTOR	
QR4501	UNR221500L	TRANSISTOR RESISTOR	
QR4504	UNR211500L	TRANSISTOR RESISTOR	
QR4505	UNR221500L	TRANSISTOR RESISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
QR4506	UNR221500L	TRANSISTOR RESISTOR	
QR4651	UNR221500L	TRANSISTOR RESISTOR	
R1150	ERDS2TJ105T	C.RESISTOR	
R1153	ERG2SJ331E	M.RESISTOR	
R1154	ERDS2TJ105T	C.RESISTOR	
R1155	ERDS2TJ104T	C.RESISTOR	
R1156	ERDS2TJ330T	C.RESISTOR	
R1157	ERDS2TJ162T	C.RESISTOR	
R1158	ERDS2TJ331T	C.RESISTOR	
R1159	ERDS2TJ3R3T	C.RESISTOR	
R1160	ERX1SJ47E	M.RESISTOR	
R1161	ERDS2TJ101T	C.RESISTOR	
R1162	ERDS2TJ102T	C.RESISTOR	
R1163	ERDS2TJ101T	C.RESISTOR	
R1200	ERJ6GEYG103V	M.RESISTOR CHIP	
R1202	ERJ6GEYG222V	M.RESISTOR CHIP	
R1203	ERJ6GEYG243V	M.RESISTOR CHIP	
R1204	ERJ6GEYJ123V	M.RESISTOR CHIP	
R1205	ERJ6GEYJ222V	M.RESISTOR CHIP	
R1206	ERJ6GEYJ271V	M.RESISTOR CHIP	
R1342	ERJ3GEYJ104V	M.RESISTOR CHIP	
R1351	ERDS2TJ471T	C.RESISTOR	
R1501	ERJ3GEYJ273V	M.RESISTOR CHIP	
R1502	ERJ3GEYJ273V	M.RESISTOR CHIP	
R1503	ERDS2TJ151T	C.RESISTOR	
R1511	ERJ3GEYJ273V	M.RESISTOR CHIP	
R1512	ERJ3GEYJ273V	M.RESISTOR CHIP	
R1513	ERJ6GEYJ121V	M.RESISTOR CHIP	
R2001	ERJ3GEYJ392V	M.RESISTOR CHIP	
R2002	ERJ3GEYJ105V	M.RESISTOR CHIP	
R2099	ERJ3GEYJ682V	M.RESISTOR CHIP	
R2501	ERJ6GEYJ1R2V	M.RESISTOR CHIP	
R2503	ERJ6GEYJ1R5V	M.RESISTOR CHIP	
R2514	ERJ3GEYJ221V	M.RESISTOR CHIP	
R2515	ERJ3GEYJ221V	M.RESISTOR CHIP	
R2516	ERJ3GEYJ221V	M.RESISTOR CHIP	
R2519	ERJ6GEYJ822V	M.RESISTOR CHIP	
R2520	ERJ3GEYJ183V	M.RESISTOR CHIP	
R2521	ERJ3GEYJ102V	M.RESISTOR CHIP	
R2522	ERJ3GEYJ101V	M.RESISTOR CHIP	
R2523	ERJ3GEYJ101V	M.RESISTOR CHIP	
R2551	ERJ3GEYJ103V	M.RESISTOR CHIP	
R2552	ERJ3GEYJ103V	M.RESISTOR CHIP	
R2561	ERJ3GEYJ102V	M.RESISTOR CHIP	
R2562	ERDS2TJ473T	C.RESISTOR	
R2563	ERJ3GEYJ102V	M.RESISTOR CHIP	
R3001	ERJ3GEYJ622V	M.RESISTOR CHIP	
R3002	ERJ3GEYJ822V	M.RESISTOR CHIP	
R3003	ERJ3GEYJ152V	M.RESISTOR CHIP	
R3004	ERJ3GEYJ682V	M.RESISTOR CHIP	
R3005	ERJ3GEYJ472V	M.RESISTOR CHIP	
R3011	ERJ3GEYJ332V	M.RESISTOR CHIP	
R3012	ERJ3GEYJ102V	M.RESISTOR CHIP	

Ref. No.	Part No.	Part Name & Description	Remarks
R3013	ERJ3GEYJ273V	M.RESISTOR CHIP	
R3018	ERJ3GEYJ153V	M.RESISTOR CHIP	
R3020	ERJ3GEYJ152V	M.RESISTOR CHIP	
R3021	ERJ3GEYJ471V	M.RESISTOR CHIP	
R3022	ERDS2TJ681T	C.RESISTOR	
R3023	ERJ3GEYJ471V	M.RESISTOR CHIP	
R3024	ERJ3GEYJ102V	M.RESISTOR CHIP	
R3025	ERJ3GEYJ332V	M.RESISTOR CHIP	
R3026	ERJ3GEYJ332V	M.RESISTOR CHIP	
R3029	ERJ3GEYJ822V	M.RESISTOR CHIP	
R3031	ERJ3GEY0R00V	M.RESISTOR CHIP	
R3032	ERJ3GEYJ685V	M.RESISTOR CHIP	
R3033	ERJ3GEYJ335V	M.RESISTOR CHIP	
R3037	ERJ3GEYJ750V	M.RESISTOR CHIP	
R3038	ERJ3GEYJ222V	M.RESISTOR CHIP	*2
R3039	ERJ3GEYJ680V	M.RESISTOR CHIP	
R3040	ERJ3GEYJ392V	M.RESISTOR CHIP	
R3041	ERJ6GEYJ221V	M.RESISTOR CHIP	
R3042	ERJ3GEYJ473V	M.RESISTOR CHIP	
R3043	ERJ3GEY0R00V	M.RESISTOR CHIP	
R3212	ERJ3GEYJ750V	M.RESISTOR CHIP	
R4011	ERJ3GEYJ183V	M.RESISTOR CHIP	
R4012	ERJ3GEYJ153V	M.RESISTOR CHIP	
R4015	ERJ3GEYJ123V	M.RESISTOR CHIP	
R4016	ERJ3GEYJ473V	M.RESISTOR CHIP	
R4017	ERJ3GEYJ183V	M.RESISTOR CHIP	
R4018	ERJ3GEYJ103V	M.RESISTOR CHIP	
R4039	ERJ3GEYJ103V	M.RESISTOR CHIP	
R4061	ERJ3GEYJ474V	M.RESISTOR CHIP	
R4062	ERJ3GEYJ153V	M.RESISTOR CHIP	
R4063	ERJ3GEYJ511V	M.RESISTOR CHIP	
R4071	ERJ3GEYJ153V	M.RESISTOR CHIP	
R4073	ERJ3GEY0R00V	M.RESISTOR CHIP	
R4074	ERJ3GEY0R00V	M.RESISTOR CHIP	
R4075	ERJ3GEYJ471V	M.RESISTOR CHIP	
R4076	ERJ3GEYJ471V	M.RESISTOR CHIP	
R4081	ERJ3GEYJ752V	M.RESISTOR CHIP	
R4082	ERJ3GEYJ332V	M.RESISTOR CHIP	
R4084	ERJ3GEYJ102V	M.RESISTOR CHIP	
R4085	ERJ3GEYJ102V	M.RESISTOR CHIP	
R4086	ERJ3GEYJ222V	M.RESISTOR CHIP	
R4087	ERJ3GEYJ222V	M.RESISTOR CHIP	
R4088	ERJ3GEY0R00V	M.RESISTOR CHIP	
R4500	ERJ3GEYJ102V	M.RESISTOR CHIP	
R4502	ERJ3GEYJ513V	M.RESISTOR CHIP	
R4503	ERJ3GEYJ513V	M.RESISTOR CHIP	
R4505	ERJ3GEYJ392V	M.RESISTOR CHIP	
R4506	ERJ3GEYJ392V	M.RESISTOR CHIP	
R4509	ERJ3GEYJ513V	M.RESISTOR CHIP	
R4510	ERJ3GEYJ392V	M.RESISTOR CHIP	
R4511	ERJ3GEYJ513V	M.RESISTOR CHIP	
R4512	ERJ3GEYJ392V	M.RESISTOR CHIP	
R4513	ERJ3GEYJ222V	M.RESISTOR CHIP	
R4525	ERJ3GEYJ102V	M.RESISTOR CHIP	

Ref. No.	Part No.	Part Name & Description	Remarks
R4527	ERJ3GEYJ681V	M.RESISTOR CHIP	
R4530	ERJ3GEYJ472V	M.RESISTOR CHIP	
R4532	ERJ3GEYJ472V	M.RESISTOR CHIP	
R4534	ERJ3GEYJ124V	M.RESISTOR CHIP	
R4538	ERJ3GEYJ333V	M.RESISTOR CHIP	
R4539	ERJ3GEYJ331V	M.RESISTOR CHIP	
R4540	ERJ3GEYJ331V	M.RESISTOR CHIP	
R4541	ERJ3GEYJ471V	M.RESISTOR CHIP	
R4542	ERJ3GEYJ471V	M.RESISTOR CHIP	
R4581	ERJ3GEYJ333V	M.RESISTOR CHIP	
R4582	ERJ3GEYJ333V	M.RESISTOR CHIP	
R4583	ERJ3GEYJ563V	M.RESISTOR CHIP	
R4584	ERJ3GEYJ563V	M.RESISTOR CHIP	
R4585	ERJ3GEYJ511V	M.RESISTOR CHIP	
R4586	ERJ3GEYJ511V	M.RESISTOR CHIP	
R4601	ERJ3GEYJ223V	M.RESISTOR CHIP	
R4602	ERJ3GEYJ682V	M.RESISTOR CHIP	
R4651	ERJ3GEYJ681V	M.RESISTOR CHIP	
R4901	ERJ3GEY0R00V	M.RESISTOR CHIP	
R4902	ERJ3GEY0R00V	M.RESISTOR CHIP	
R6001	ERJ3GEYJ102V	M.RESISTOR CHIP	
R6002	ERJ3GEYJ102V	M.RESISTOR CHIP	
R6003	ERJ3GEYJ223V	M.RESISTOR CHIP	
R6006	ERJ3GEYJ183V	M.RESISTOR CHIP	
R6007	ERJ3GEYJ103V	M.RESISTOR CHIP	
R6008	ERJ3GEY0R00V	M.RESISTOR CHIP	
R6009	ERJ3GEYJ103V	M.RESISTOR CHIP	
R6010	ERJ3GEYJ103V	M.RESISTOR CHIP	
R6011	ERJ3GEYG223V	M.RESISTOR CHIP	
R6012	ERJ3GEYJ561V	M.RESISTOR CHIP	
R6013	ERJ3GEYJ105V	M.RESISTOR CHIP	
R6016	ERJ3GEYG103V	M.RESISTOR CHIP	
R6017	ERJ3GEYJ222V	M.RESISTOR CHIP	
R6018	ERJ3GEYJ103V	M.RESISTOR CHIP	
R6021	ERJ3GEYJ103V	M.RESISTOR CHIP	
R6022	ERJ3GEYJ102V	M.RESISTOR CHIP	
R6023	ERJ3GEYJ332V	M.RESISTOR CHIP	
R6028	ERJ3GEYG103V	M.RESISTOR CHIP	
R6029	ERJ3GEYG103V	M.RESISTOR CHIP	
R6031	ERJ3GEYJ471V	M.RESISTOR CHIP	
R6032	ERJ3GEYJ471V	M.RESISTOR CHIP	
R6102	ERDS2TJ222T	C.RESISTOR	
R6104	ERJ3GEYJ221V	M.RESISTOR CHIP	
R6105	ERJ3GEYJ221V	M.RESISTOR CHIP	
R6106	ERJ3GEYJ221V	M.RESISTOR CHIP	
R6107	ERJ3GEYJ221V	M.RESISTOR CHIP	
R6201	ERJ3GEYJ332V	M.RESISTOR CHIP	
R6302	ERDS2TJ682T	C.RESISTOR	
R6307	ERJ6GEYJ222V	M.RESISTOR CHIP	
R6309	ERDS2TJ821T	C.RESISTOR	
R6310	ERJ6GEYJ182V	M.RESISTOR CHIP	
R6400	ERJ3GEYJ101V	M.RESISTOR CHIP	
R6401	ERJ3GEYJ101V	M.RESISTOR CHIP	
R7301	ERJ3GEY0R00V	M.RESISTOR CHIP	*2

Ref. No.	Part No.	Part Name & Description	Remarks
R7305	ERJ3GEYJ101V	M.RESISTOR CHIP	*2
R7306	ERJ3GEYJ392V	M.RESISTOR CHIP	*2
R7307	ERJ3GEYJ472V	M.RESISTOR CHIP	*2
R7308	ERJ3GEYJ752V	M.RESISTOR CHIP	*2
R7310	ERJ3GEYJ221V	M.RESISTOR CHIP	*2
R7312	ERJ3GEYG682V	M.RESISTOR CHIP	*2
R7313	ERJ3GEYG682V	M.RESISTOR CHIP	*2
R7314	ERJ3GEYG682V	M.RESISTOR CHIP	*2
R7315	ERJ3GEYG432V	M.RESISTOR CHIP	*2
R7316	ERJ3GEYG332V	M.RESISTOR CHIP	*2
R7317	ERJ3GEYG432V	M.RESISTOR CHIP	*2
R7318	ERJ3GEYG332V	M.RESISTOR CHIP	*2
R7319	ERJ3GEYG432V	M.RESISTOR CHIP	*2
R7320	ERJ3GEYG332V	M.RESISTOR CHIP	*2
R7321	ERJ3GEYJ562V	M.RESISTOR CHIP	*2
R7323	ERJ3GEYJ912V	M.RESISTOR CHIP	*2
R7324	ERJ3GEYJ101V	M.RESISTOR CHIP	*2
R7325	ERJ3GEYJ101V	M.RESISTOR CHIP	*2
R7502	ERJ3GEYJ912V	M.RESISTOR CHIP	
R7503	ERJ3GEYJ362V	M.RESISTOR CHIP	
R7505	ERJ3GEYJ123V	M.RESISTOR CHIP	
R7506	ERJ3GEYJ123V	M.RESISTOR CHIP	
R7509	ERJ3GEYJ392V	M.RESISTOR CHIP	
R7513	ERJ3GEYJ182V	M.RESISTOR CHIP	
R7514	ERJ3GEYJ182V	M.RESISTOR CHIP	
R7516	ERJ3GEYJ154V	M.RESISTOR CHIP	
R7517	ERJ3GEYJ392V	M.RESISTOR CHIP	
R7518	ERJ3GEYJ512V	M.RESISTOR CHIP	
R7519	ERJ3GEYJ362V	M.RESISTOR CHIP	
R7520	ERJ3GEYJ912V	M.RESISTOR CHIP	
R7521	ERJ3GEYJ154V	M.RESISTOR CHIP	
R7522	ERJ3GEYJ203V	M.RESISTOR CHIP	
R7523	ERJ3GEYJ512V	M.RESISTOR CHIP	
R7525	ERDS2TJ821T	C.RESISTOR	
R7526	ERDS2TJ220T	C.RESISTOR	
R7527	ERJ3GEYJ203V	M.RESISTOR CHIP	
R7530	ERJ3GEYJ103V	M.RESISTOR CHIP	
R7601	ERDS2TJ331T	C.RESISTOR	
R7606	J0JCC0000124	EMI/EMC FILTER	
R7607	J0JCC0000124	EMI/EMC FILTER	
R7611	ERDS2TJ331T	C.RESISTOR	
R7706	ERJ3GEYJ101V	M.RESISTOR CHIP	*1
R7707	ERJ3GEYJ102V	M.RESISTOR CHIP	*1
R7751	ERJ3GEYJ102V	M.RESISTOR CHIP	
S1531	K0C111A00006	SWITCH	
S1532	K0ZZ00000598	SWITCH	
S7501	EVQ21409K	LIGHT TOUCH SWITCH	
S7502	EVQ21409K	LIGHT TOUCH SWITCH	
S7503	EVQ11L09B	LIGHT TOUCH SWITCH	
S7505	EVQ11L09B	LIGHT TOUCH SWITCH	
S7506	EVQ11L09B	LIGHT TOUCH SWITCH	
S7507	EVQ11L09B	LIGHT TOUCH SWITCH	
S7509	EVQ21409K	LIGHT TOUCH SWITCH	

Ref. No.	Part No.	Part Name & Description	Remarks
S7510	EVQ21409K	LIGHT TOUCH SWITCH	
S7511	EVQ11L09B	LIGHT TOUCH SWITCH	
S7512	EVQ21409K	LIGHT TOUCH SWITCH	
S7513	EVQ21409K	LIGHT TOUCH SWITCH	
S7515	EVQ21409K	LIGHT TOUCH SWITCH	
S7516	EVQ21409K	LIGHT TOUCH SWITCH	
S7518	EVQ21409K	LIGHT TOUCH SWITCH	
S7519	EVQ21409K	LIGHT TOUCH SWITCH	
S7520	EVQ21409K	LIGHT TOUCH SWITCH	
T1150	G4D2A0000113	SWITCHING TRANSFORMER	
T4081	EQQ7QF024Q	TRANSFORMER	
TU7601	ENG57818G1	UV TUNER	*1
TU7601	ENG57820G1	UV TUNER	*2
W501	ERJ3GEY0R00V	M.RESISTOR CHIP	
W502	D0GDR00JA017	M.RESISTOR	
W503	ERJ3GEY0R00V	M.RESISTOR CHIP	
W504	D0GDR00JA017	M.RESISTOR	
W505	D0GDR00JA017	M.RESISTOR	
W506	D0GDR00JA017	M.RESISTOR	
W507	ERJ3GEY0R00V	M.RESISTOR CHIP	
W508	ERJ3GEY0R00V	M.RESISTOR CHIP	
W510	ERJ3GEY0R00V	M.RESISTOR CHIP	
W512	D0GDR00JA017	M.RESISTOR	
W514	ERJ3GEY0R00V	M.RESISTOR CHIP	
W515	ERJ3GEY0R00V	M.RESISTOR CHIP	
W516	ERJ3GEY0R00V	M.RESISTOR CHIP	
W517	D0GDR00JA017	M.RESISTOR	
W518	D0GDR00JA017	M.RESISTOR	
W519	D0GDR00JA017	M.RESISTOR	
W520	ERJ3GEY0R00V	M.RESISTOR CHIP	
W521	ERJ3GEY0R00V	M.RESISTOR CHIP	
W522	D0GDR00JA017	M.RESISTOR	
W523	D0GDR00JA017	M.RESISTOR	
W525	D0GDR00JA017	M.RESISTOR	
W526	ERJ3GEY0R00V	M.RESISTOR CHIP	
W527	ERJ3GEY0R00V	M.RESISTOR CHIP	
W528	ERJ3GEY0R00V	M.RESISTOR CHIP	
W529	ERJ3GEY0R00V	M.RESISTOR CHIP	
W530	ERJ3GEY0R00V	M.RESISTOR CHIP	
W531	ERJ3GEY0R00V	M.RESISTOR CHIP	
W532	ERJ3GEY0R00V	M.RESISTOR CHIP	
W534	ERJ3GEY0R00V	M.RESISTOR CHIP	
W535	ERJ3GEY0R00V	M.RESISTOR CHIP	
W536	ERJ3GEY0R00V	M.RESISTOR CHIP	
W537	ERJ3GEY0R00V	M.RESISTOR CHIP	
W538	ERJ3GEY0R00V	M.RESISTOR CHIP	
W539	ERJ3GEY0R00V	M.RESISTOR CHIP	
W540	D0GDR00JA017	M.RESISTOR	
W541	ERJ3GEY0R00V	M.RESISTOR CHIP	
W542	ERJ3GEY0R00V	M.RESISTOR CHIP	
W543	ERJ3GEY0R00V	M.RESISTOR CHIP	

Ref. No.	Part No.	Part Name & Description	Remarks
W544	D0GDR00JA017	M.RESISTOR	
W545	ERJ3GEY0R00V	M.RESISTOR CHIP	*2
W546	ERJ3GEY0R00V	M.RESISTOR CHIP	*2
X3001	H0D357400067	CRYSTAL OSCILLATOR	
X3002	H0D443400039	CRYSTAL OSCILLATOR	
X6001	H0D120500009	CRYSTAL OSCILLATOR	
X6002	H0A327200064	CRYSTAL OSCILLATOR	
X7301	H0H400400006	CRYSTAL OSCILLATOR	*2
		MISCELLANEOUS	
	EYF52BC	FUSE HOLDER	
	EYF52BC	FUSE HOLDER	
	VMD4258	PHOTO TRANSISTOR HOLDER	
	VMD4258	PHOTO TRANSISTOR HOLDER	

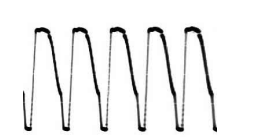
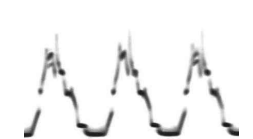
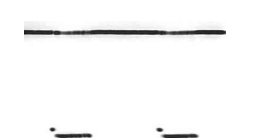
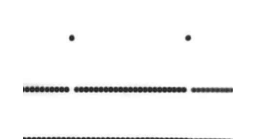
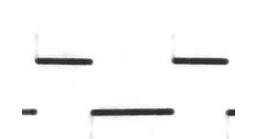
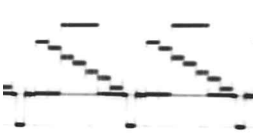
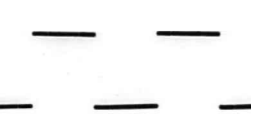
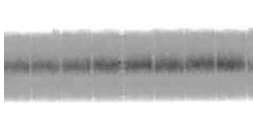
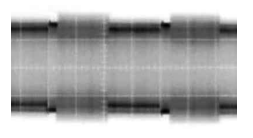
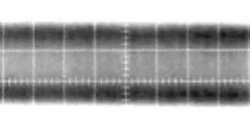
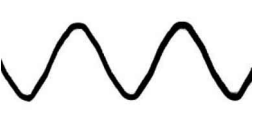
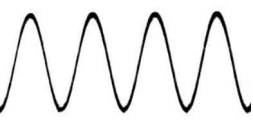
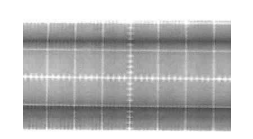
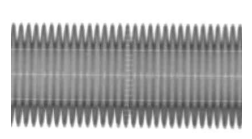
12. Schematic Diagram for printing with A4 size

443NT [L]	4.43 NTSC ①	BIL	BILINGUAL
A. COMP	AUDIO COMPONENT SIGNAL	BIL [L]	BILINGUAL ①
A. COMPO	AUDIO COMPONENT SIGNAL	BIL. [H]	BILINGUAL ②
A. D.P [L]	AUDIO DUBBING PAUSE ①	BIL/M1 [L]	BILINGUAL ①
A. D/L [L]	AUDIO DUBBING PAUSE ①	BS CLOCK	BS CLOCK
A. DEF [S]	AUDIO DEFEAT	BS DATA	BS DATA
A. DEF [S] [L]	AUDIO DEFEAT	BS LCH IN	BS L CHANNEL INPUT
A. DUB P [L]	AUDIO DUBBING PAUSE ①	BS MIX [H]	BS MIX ②
A. DUB [H]	AUDIO DUBBING ②	BS MON [H]	BS MONITOR ②
A. ERASE	AUDIO ERASE	BS MONI [H]	BS MONITOR ②
A. H. SW	AUDIO HEAD SWITCHING PULSE	BS RCH IN	BS R CHANNEL INPUT
A. HEAD [R]	AUDIO HEAD (REC)	BS VIDEO	BS VIDEO SIGNAL
A. HEAD [W]	AUDIO HEAD (PLAY)	BS VIDEO/BS1	BS VIDEO SIGNAL
A. IN [L]	AUDIO INPUT (L)	BS [H]	BS ②
A. IN [R]	AUDIO INPUT (R)	BS. LEVEL	BS LEVEL
A. MUT [H]	AUDIO MUTE ②	BS. M [H]	BS MONITOR ②
A. MUTE [H]	AUDIO MUTE ②	BS/VTR [H]	BS/VTR ②
A. OUT [L]	AUDIO OUTPUT (L)	BUS CLK	BUS CLOCK
A. OUT [R]	AUDIO OUTPUT (R)	BUS LSN	BUS LISTEN
A. RF OUT	AUDIO RF SIGNAL OUTPUT	BUS TLK	BUS TALK
A/VS/S. DATA	AV SW/SERIAL DATA	BUZZER	BUZZER
AC ONLINE	AC ONLINE	CAP EC	CAPSTAN TORQUE CONTROL
AC. O/EE. H	AC ONLINE/EE ②	CAP M GND	CAPSTAN MOTOR GND
AFC S C	AFC S CURVE	CAP. ET	CAPSTAN TORQUE CONTROL
AFC [S]	AFC S CURVE	CAP. FG1	CAPSTAN FG1 PULSE
AFC. DEF	AFC DEFEAT	CAP. FG2	CAPSTAN FG2 PULSE
ARFC OUT	AUDIO RF SIGNAL OUTPUT	CAS. SW	CASSETTE SW
ART. V	ARTIFICIAL VERTICAL SYNC SIGNAL	CCN	PLAYBACK CONTROL SIGNAL (-)
ART. V. MM	ARTIFICIAL VERTICAL SYNC SIGNAL MONO MULTI	CCP	PLAYBACK CONTROL SIGNAL (+)
ART. V/H/N	ARTIFICIAL VERTICAL SYNC SIGNAL ②/NORMAL	CHM	CONTROL SIGNAL (+)
AT. V/H/N	ARTIFICIAL VERTICAL SYNC SIGNAL	CHP	CONTROL SIGNAL (-)
ATSW/TEST/NOR/SE	TEST/NORMAL/SERVICE	CINEM [L]	CINEMA ①
AUDIO IN [L]	AUDIO INPUT (L)	CINEMA [L]	CINEMA ①
AUDIO IN [R]	AUDIO INPUT (R)	CINEMA/MIX	CINEMA/MIX
AUDIO OUT [L]	AUDIO OUTPUT (L)	CKL	RATCH LOCK
AUDIO OUT [R]	AUDIO OUTPUT (R)	CKS	SHIFT LOCK
AUDIO SELECT [H]	AUDIO SELECT ②	CL	CLOCK
AUDIO. L	AUDIO (L)	CLK	CLOCK
AUDIO. R	AUDIO (R)	CLK (C.G)	CLOCK
AV CNT	AV CONTROL	CLOCK. IN	CLOCK INPUT
AV CTL	AV CONTROL	CLP	CLAMP
AV CTL/S. CLK	AV CONTROL/SERIAL CLOCK	COL/B/W/NOR	COLOUR/BLACK & WHITE/NORMAL
AV. C.M.	AV CONTROL MODE	COLOR [H]	COLOUR ②
AVCNT/METER. R	AV CONTROL/LEVEL METER (R)	CONV	CONVERTOR
AVSW/METER. L	AV SW/LEVEL METER (L)	CS	CHIP SELECT
B MODE. H	B MODE ②	CTL GND	CONTROL GND
B.G.P	BURST GATE PULSE	CTL HEAD [+]	CONTROL HEAD (+)
BACKUP 5V	BACK UP 5V	CTL HEAD [-]	CONTROL HEAD (-)
BAND. U.E.	BAND U	CTL [+]	CONTROL HEAD (+)
BANDVL. D	BAND VL	CTL [-]	CONTROL HEAD (-)
BI/MI [L]	BILINGUAL/MIX ①	CUE BIAS	CUE BIAS
		CURRENT LIM	CURRENT LIMMITER
		CYL ET	CYLINDER TORQUE CONTROL

CYL GND	CYLINDER GND	FULL. E. 12V	FULL ERASE 12V
D.F.M. REC [H]	DELAIED FM RECORDING Ⓜ	GND [A]	GND (ANALOG)
D. FM REC [L]	DELAIED FM RECORDING Ⓛ	GND [TU]	GND (TUNER)
D. GND	DIGITAL GND	GND/N. SW. 12V	GND/NON SW 12V
D. REC [H]	DELAYED RECORDING Ⓜ	H. SYNC	HORIZONTAL SYNC
D4/S. LED	D4/STILL LED	H. AMP. SW	HEAD AMP SW PULSE
D4/STILLED	D4/STILL LED	H. P <R>	HEAD PHONE (R)
DAC [CLK]	TUNER DAC (CLOCK)	H. P <L>	HEAD PHONE (L)
DAC/FSCS	TUNER DAC/FS CHIP SELECT	H. P GND	HEAD PHONE GND
DAREC [H]	DELAYED AUDIO RECORDING Ⓜ	H. P OUT [L]	HEAD PHONE OUTPUT (L)
DATA	DATA	H. P OUT [R]	HEAD PHONE OUTPUT (R)
DECODER [L]	DECODER (L)	H. SW	HEAD SW PULSE
DECODER [R]	DECODER (R)	HEAD PHONE [L]	HEAD PHONE (L)
DEW	DEW	HEAD PHONE [R]	HEAD PHONE (R)
DEW SNS	DEW SENSOR	HEAD SW	HEAD SW
DFMRE [H]	DELAYED FM AUDIO RECORDING Ⓜ	HEATER [+]	HEATER (+)
E. REC 5V	EXCEPT RECORDING 5V	HEATER [-]	HEATER (-)
EC	ERROR TORQUE CONTROL	HSS	HORIZONTAL SYNC SIGNAL
ECR	ERROR TORQUE CONTROL	HTR [+]	HEATER (+)
	REFERENCE VOLTAGE	HTR [-]	HEATER (-)
EDT TRIG [L]	EDIT TRIGGER Ⓛ	I RFE	REFERENCE CURRENT
EDIT [H]	EDIT Ⓜ	ICL	CONTROL AGC CIRCUIT
EE [H]	EE Ⓜ	IF	INTERMEDIATE FREQUENCY
EE [H]/INS [M]	EE Ⓜ/INSERT Ⓜ	IN SELA1	INPUT SELECT A1 POSITION
EE. VV. TR	EE/VV/TRICK PLAY	IN SELA2	INPUT SELECT A2 POSITION
EJECT. PO	EJECT POSITION	IN SELA3	INPUT SELECT A3 POSITION
EJECT/VDET	EJECT/REVERSE SLOW LOCK	INS L/R [L]	INSERT Lch/Rch Ⓛ
ENV. SEL	ENVELOPE SELECT	INS. [H]	INSERT Ⓜ
ENVE. OUT	ENVELOPE OUTPUT	INSEL A1	INPUT SELECT A1 POSITION
ENVE. SEL	ENVELOPE SELECT	INSEL A2	INPUT SELECT A2 POSITION
ENV SELECT	ENVELOPE SELECT	INSERT	INSERT
EP [H]	LP Ⓜ	INSERT [H]	INSERT Ⓜ
EP/LP [H]	LP Ⓜ	IO CS	INPUT/OUTPUT CHIP SELECT
EP/LP/SP	LP/SP	JOG1	JOG1
EP/SS [H]	LP/SLOW/STILL/STOP Ⓜ	JOG S3 LED/FOWRD	JOG LED/FORWARD LED
EPROMCS	EPROM CHIP SELECT	JOG/F. LED	JOG LED/FORWARD LED
EX. REC 5V	EXCEPT RECORDING 5V	JSB [H]	JSB Ⓜ
FF/REW [L]	FIRST FORWARD/REWIND Ⓛ	JST. CLCK	JUST CLOCK
FG1 IN	FG1 PULSE INPUT	JST. CLK	JUST CLOCK
FG2 IN	FG2 PULSE INPUT	JST. CLOCK	JUST CLOCK
FILTER ADJUSTMENT	FILTER ADJUSTMENT	L. OUT	Lch OUTPUT
FLY ERASE [H]	FLYING ERASE HEAD ON Ⓜ	L. CH [H]	Lch Ⓜ
FLY ON [H]	FLYING ERASE HEAD ON Ⓜ	L. CH [L]	Lch Ⓛ
FLY. E [H]	FLYING ERASE HEAD ON Ⓜ	LED (MAIN)	LED (MAIN)
FM MUT [H]	FM AUDIO MUTE Ⓜ	LED (STEREO)	LED (STEREO)
FM MUTE [H]	FM AUDIO MUTE Ⓜ	LED (SUB)	LED (SUB)
FM OUT [L]	FM OUTPUT (L)	LED CKL	LED SERIAL CLOCK
FM OUT [R]	FM OUTPUT (R)	LED CKS	LED SERIAL CLOCK
FM PACK OUT [L]	FM PACK OUTPUT (L)	LED DATA	LED SERIAL DATA
FM PACK OUT [R]	FM PACK OUTPUT (R)	LINE IN 1 [L]	LINE INPUT 1 (L)
FM/BS SEL [L]	FM/BS SELECT (L)	LINE IN 1 [R]	LINE INPUT 1 (R)
FM/BS SEL [R]	FM/BS SELECT (R)	LINE IN 2 [L]	LINE INPUT 2 (L)
FS. CLK	FS CLOCK	LINE IN 2 [R]	LINE INPUT 2 (R)
FUL. E [H]	FULL ERASE HEAD ON Ⓜ	LINE IN V	LINE INPUT VIDEO
FULL. E [H]	FULL ERASE HEAD ON Ⓜ	LINE IN [L]	LINE INPUT (L)

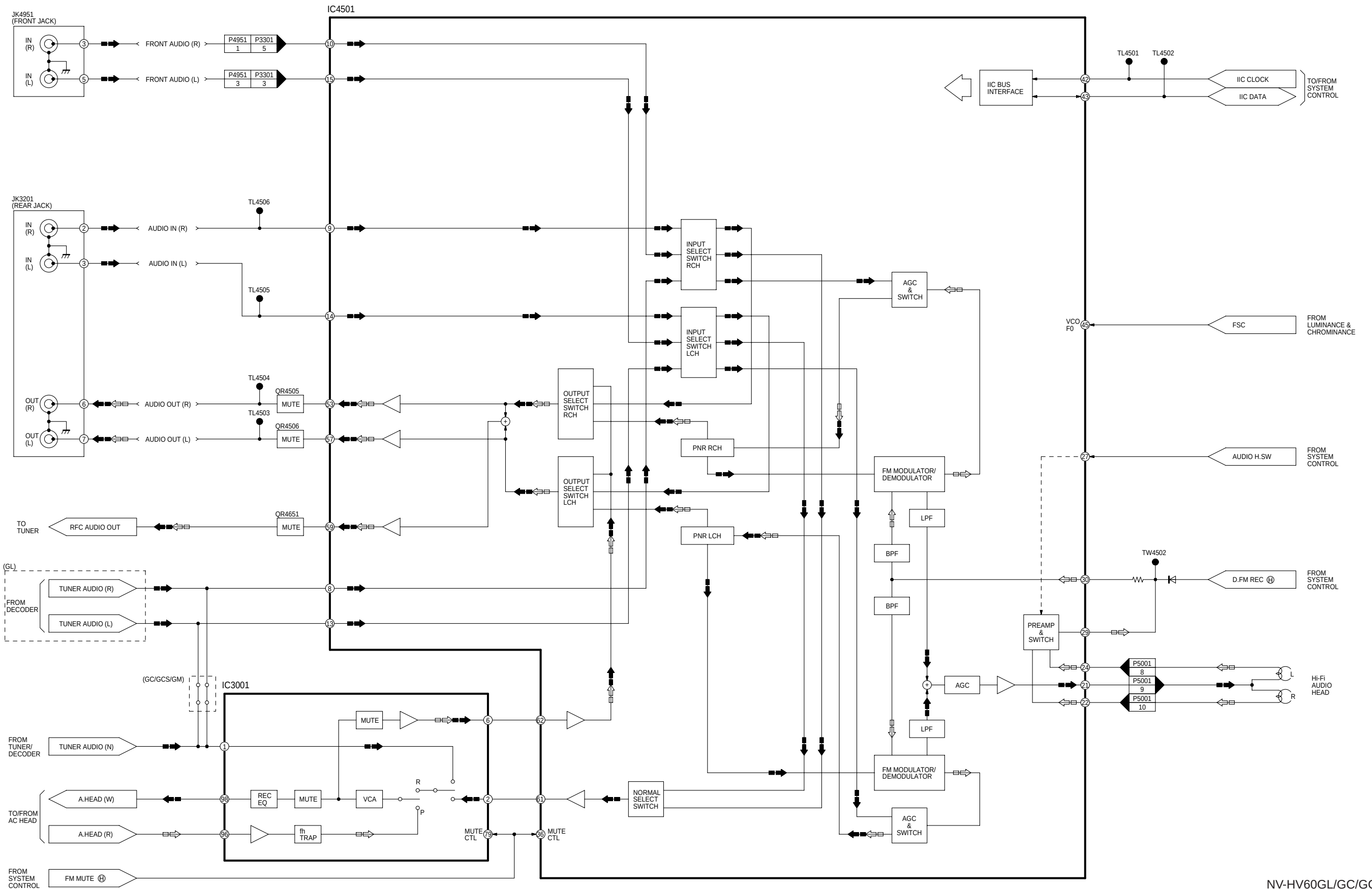
LINE IN [R]	LINE INPUT (R)	P-OFF [H]	POWER OFF $\textcircled{\text{H}}$
LINE OUT [L]	LINE OUTPUT (L)	P-OFF [L]	POWER OFF $\textcircled{\text{L}}$
LINE OUT [R]	LINE OUTPUT (R)	P. FAIL	POWER FAILURE DETECT
LP [H]	LP $\textcircled{\text{H}}$	P. OFF [H]	POWER OFF $\textcircled{\text{H}}$
LPTRI [L]	LP TRICK PLAY $\textcircled{\text{L}}$	P. OFF [L]	POWER OFF $\textcircled{\text{L}}$
Lch/A. DUB	Lch/AUDIO DUBBING	PAL [H]	PAL $\textcircled{\text{H}}$
M GND	MOTOR GND	PAL [L]/NTSC [H]	PAL $\textcircled{\text{L}}$ /NTSC $\textcircled{\text{H}}$
M REG	MOTOR REGULATOR	PB ADJ OUT	PLAYBACK ADJUST OUTPUT
MAIN OUT	MAIN OUTPUT	PB OUT	PLAYBACK OUTPUT
MAIN [L]	MAIN $\textcircled{\text{L}}$	PB. H	PLAYBACK $\textcircled{\text{H}}$
MAIN/MONO	MAIN/MONAUURAL	PFG	PG/FG
MAX IN	MAXIMAM INPUT	PHOTSN +B	PHOTO SENSOR +B
MES [H]	MESECAM $\textcircled{\text{H}}$	PICT. CNT	PICTURE CONTROL
MESE [H]	MESECAM $\textcircled{\text{H}}$	PLAY LED/RVS LED	PLAY LED/REVERSE LED
MESE [L]	MESECAM $\textcircled{\text{L}}$	PLAY. PO	PLAY POSITION
METER 5V	LEVEL METER 5V	PLAY/R. LED	PLAY LED/REVERSE LED
METER [L]	LEVEL METER (L)	PLY/DEW	PLAY/DEW $\textcircled{\text{H}}$
METER [R]	LEVEL METER (R)	POWER OFF [L]	POWER OFF $\textcircled{\text{L}}$
METER. L/AVS	LEVEL METER (L)	PREROLL [H]	PREROLL $\textcircled{\text{H}}$
METER. R/AVC	LEVEL METER (R)	PWRFAIL	POWER FAILURE DETECT
MI/BI [L]	MIX $\textcircled{\text{H}}$ /BILIGUAL	R. CH [H]	Rch $\textcircled{\text{H}}$
MIC GND	MIC GND	R. CH [L]	Rch $\textcircled{\text{L}}$
MIC IN	MIC INPUT	R. ST	RESET
MIC IN [L]	MIC INPUT (L)	R/S/F	REVERSE $\textcircled{\text{H}}$ /STOP $\textcircled{\text{M}}$ /FORWARD $\textcircled{\text{L}}$
MIC IN [R]	MIC INPUT (R)	RCH [H]	Rch $\textcircled{\text{H}}$
MIC [H]	MIC $\textcircled{\text{H}}$	REC 12V	RECORDING 12V
MIX [H]	MIX $\textcircled{\text{H}}$	REC CHROMA	RECORDING CHROMINANCE SIGNAL
MIX [H]/CINEMA [L]	MIX $\textcircled{\text{H}}$ /CINEMA SOUND $\textcircled{\text{L}}$	REC H	RECORDING $\textcircled{\text{H}}$
MIX/CINE	MIX $\textcircled{\text{H}}$ /CINEMA SOUND $\textcircled{\text{L}}$	REC IN	RECORDING INPUT
MIX/CINEMA [L]	MIX $\textcircled{\text{H}}$ /CINEMA SOUND $\textcircled{\text{L}}$	REC OUT [L]	RECORDING OUTPUT $\textcircled{\text{L}}$
MN. H/M. L	MONAURAL $\textcircled{\text{H}}$ /MAIN $\textcircled{\text{L}}$	REC START	RECORDING START
MN. H/MAI. L	MONAURAL $\textcircled{\text{H}}$ /MAIN $\textcircled{\text{L}}$	REC VR [C]	RECORDING VOLUME (COMMON)
MN2/MES. L	MONAURAL 2/MESECAM $\textcircled{\text{L}}$	REC VR [L]	RECORDING VOLUME (L)
MODE SEL	AUDIO MODE SELECT	REC VR [R]	RECORDING VOLUME (R)
MODE SW	AUDIO MODE SW	REC Y	RECORDING LUMINANCE SIGNAL
MODE. S. IN	AUDIO MODE SELECT INPUT	REC [H]	RECORDING $\textcircled{\text{H}}$
MODE. S. OUT	AUDIO MODE SELECT OUTPUT	REC. C	RECORDING CHROMINANCE SIGNAL
MONO [H]	MONAURAL $\textcircled{\text{H}}$	REC. Y	RECORDING LUMINANCE SIGNAL
MONO [H]/MAIN [L]	MONAURAL $\textcircled{\text{H}}$ /MAIN $\textcircled{\text{L}}$	REC/EE CTL	RECORDING/EE CONTROL
MONO2 [L]	MONAURAL 2	REEL-T	REEL PULSE (TAKE-UP)
MONO2/MESE [FM(L)]	MONAURAL 2/MESECAM (FM $\textcircled{\text{L}}$)	REEL-S	REEL PULSE (SUPPLY)
MOTOR GND	MOTOR GND	REGULATOR FILTER	REGULATOR FILTER
MUTE	MUTE	RESET	RESET
N. A. REC [L]	NORMAL AUDIO RECORDING	REV M F/R	REVIEW MOTOR
N. SW 12V	NON SW 12V		FORWARD/REVERSE
N. SW. 5. DET	NON SW 5V DETECT	REV M V1	REVIEW MOTOR V1
NICAM	NICAM	REV M V2	REVIEW MOTOR V2
NICAM [L]	NICAM $\textcircled{\text{L}}$	REV MOTOR F/R	REVIEW MOTOR
NOL [H]	PAL $\textcircled{\text{H}}$ /4.43 NTSC $\textcircled{\text{M}}$ /3.58 NTSC $\textcircled{\text{L}}$		FORWARD/REVERSE
NOR/SOFT [H]	NORMAL/SOFT TAPE PLAY $\textcircled{\text{H}}$	REV MOTOR V1	REVIEW MOTOR V1
NORMAL [H]	NORMAL $\textcircled{\text{H}}$	REV MOTOR V2	REVIEW MOTOR V2
NR BIAS	NR BIAS	REV MOTOR [+]	REVIEW MOTOR (+)
NTSC [L]	NTSC $\textcircled{\text{L}}$	REV MOTOR [-]	REVIEW MOTOR (+)
OCH	CONTROL AGC CIRCUIT	REV. M. GND	REVIEW MOTOR GND
OUT	OUTPUT	RF. CHROMA	RF CHROMINANCE SIGNAL

RF OUT	RF OUTPUT	SYSCON 5V	SYSTEM CONTROL 5V
RF Y	RF LUMINANCE SIGNAL	SYSTEM	SYSTEM SW
RF. Y. IN	RF LUMINANCE SIGNAL INPUT	T-PHOTO	TAKE-UP PHOTO TRANSISTOR
RF. Y. OUT	RF LUMINANCE SIGNAL OUTPUT	T-RL. PLS	TAKE-UP REEL PULSE
ROTAR. SW	ROTARY SW	T. BUSCLK	TIMER BUS CLOCK
ROTARY	ROTARY SW	T. BUSLSN	TIMER BUS LISTEN
RST	RESET	T. BUSTLK	TIMER BUS TALK
RST [L]	RESET ①	T. END [L]	TAPE END ①
Rch/INST	Rch/INSERT	T. PHOTO	TAKE-UP PHOTO TRANSISTOR
S IN	SERIAL DATA INPUT	TAPE END [L]	TAPE END ①
S OUT	SERIAL DATA OUTPUT	TAPE END [L]/CAM	TAPE END ①/CAMERA PAUSE
S-PHOTO	SUPPLY PHOTO TRANSISTOR	TEST	TEST MODE
S-RL. PLS	SUPPLY REEL PULSE	TPZ	TRAPEZOIDAL WAVE CIRCUIT
S. CLK	SERIAL CLOCK	TRIC [L]	TRIC PLAY ①
S. CLK/AV	SERIAL CLOCK/AV	TRICK [L]	TRIC PLAY ①
S. DATA	SERIAL DATA	TRK. ENV	AUTO TRACKING ENVELOPE DETECT
S. DATA/A	SERIAL DATA	TU. AUDIO	TUNER AUDIO
S. PHOTO	SUPPLY PHOTO TRANSISTOR	TU. GND	TUNER GND
S. TAB [L]	SAFETY TAB SW ON ①	TU. V. IN	TUNER VIDEO SIGNAL INPUT
S/P/N	SECAM/PAL/NTSC	TU. VIDEO	TUNER VIDEO
SC IN	SERIAL CLOCK INPUT	TUN NOR IN	TUNER NORMAL INPUT
SC OUT	SERIAL CLOCK OUTPUT	TUN R	TUNER AUDIO (R)
SCK SELECT	SERIAL CLOCK SELECT	TUN. AUDIO IN	TUNER AUDIO INPUT
SEL OUT [L]	SELECT OUTPUT (L)	TUNER 12V	TUNER 12V
SEL OUT [R]	SELECT OUTPUT (R)	TUNER L	TUNER AUDIO (L)
SHUTTLE 1	SHUTTLE 1	TUNER V IN	TUNER VIDEO SIGNAL INPUT
SIF	SOUND INTERMEDIATE FREQUENCY	TUNER [L]	TUNER AUDIO (L)
SLMUT [H]	INPUT SELECT MUTE ①	TUNER [N]	TUNER AUDIO (NORMAL)
SLNID [+]	SOLENOID (+)	TUNER [R]	TUNER AUDIO (R)
SLNID [-]	SOLENOID (-)	TUNER. 12	TUNER 12V
SLW TR. MM	SLOW TRACKING MONO MULTI	TUOFF [H]	TUNER OFF ①
SLW TR. REF	SLOW TRACKING REFERENCE	TV. AUDIO	TV AUDIO
	VOLTAGE	TV/VTR	TV/VTR
SNS. GND	SENSOR GND	TXTON [L]	TEXT ON ①
SOFT [H]	SOFT TAPE PLAY ①	U. REG45V	UNREGULATOR 45V
SOFT [H]/NORMAL	SOFT TAPE PLAY ①/NORMAL ①	UNREG	UNREGULATOR
SOLENOID ON [L]	SOLENOID ON ①	UNREG19V	UNREGULATOR 19V
SP [H]	SP ①	V. REF	REFERENCE VOLTAGE
SP/L/SLP	SP/LP	V. EE [H]	VIDEO EE ①
SSS [L]	SLOW/STILL/STOP	V. EE [L]	VIDEO EE ①
STEREO LED	STEREO LED	VCO REF	REFERENCE OSCILLATER
STEREO [H]	STEREO ①	VD. IN	VIDEO SIGNAL INPUT
STEREO [L]	STEREO ①	VD. OUT	VIDEO SIGNAL OUTPUT
STOP. PO	STOP POSITION	VIDEO EE [L]	VIDEO EE ①
STOP/5V	STOP POSITION/5V	VIDEO IN	VIDEO SIGNAL INPUT
STOP1/TAPE SEL	STOP1 POSITION/TAPE SELECT	VIDEO OUT	VIDEO SIGNAL OUTPUT
STOP1/PAL:ST	STOP1 POSITION/PAL	VM	MOTOR VOLTAGE
STOP2. PO	STOP 2 POSITION	VM DOWN [L]	MOTOR VOLTAGE DOWN ①
STOP2/S-TAB	STOP 2 POSITION/SAFETY TAB SW	VSS	VERTICAL SYNC SIGNAL
STREO [H]	STEREO ①	VTR [H]	VTR ①
SUB BIAS	SUB BIAS	VTR. 12V	VTR 12V
SUB. SW	SUB SW	X IN	OSCILLATOR INPUT
SVHS CAS [L]	S-VHS CASSETTE ①	X OUT	OSCILLATOR OUTPUT
SW. 5. DET	SW 5V DETECT		
SYNC [L]	SYNC ①		

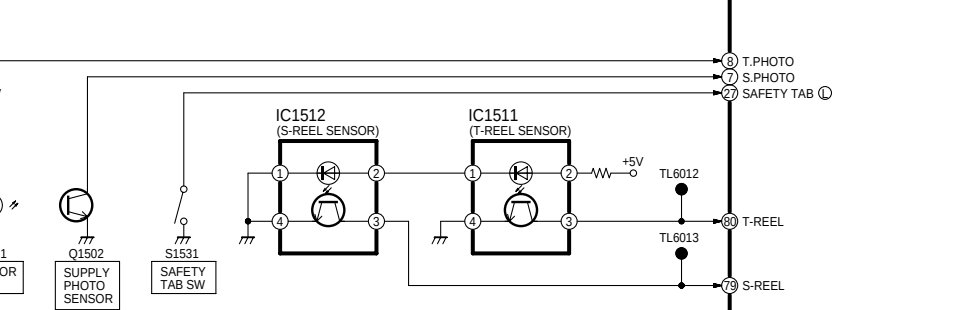
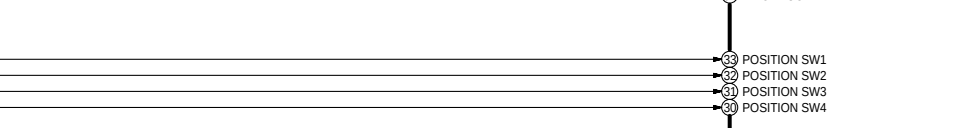
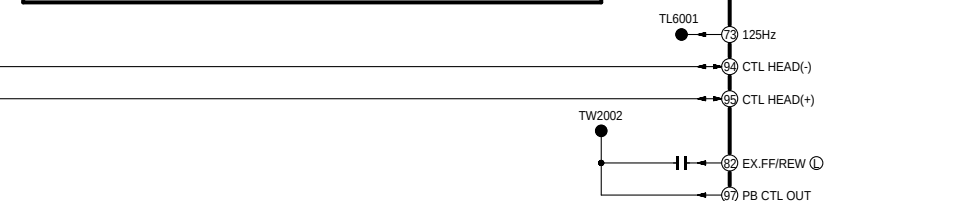
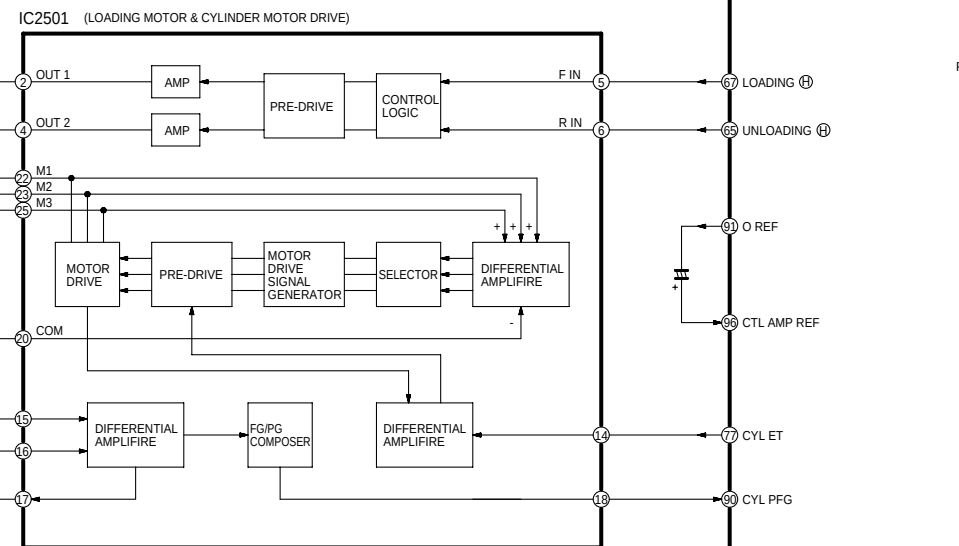
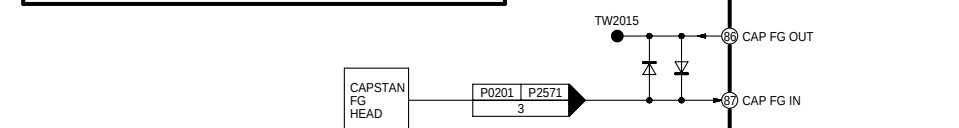
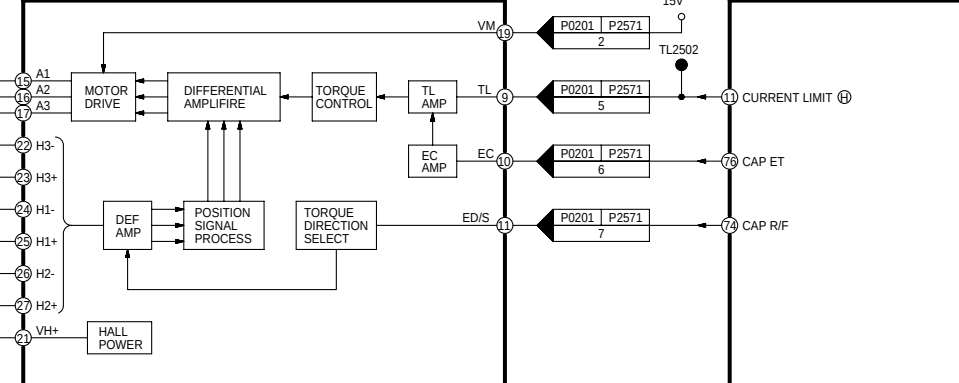
				
T1150-2 STOP 3.8Vp-p (2msec.div.)	T1150-4 STOP 560Vp-p (5usec.div.)	T1150-6 STOP 33Vp-p (5usec.div.)	T1150-11 STOP 100Vp-p (5usec.div.)	T1150-12 STOP 18Vp-p (5usec.div.)
				
T1150-13 STOP 40Vp-p (5usec.div.)	T1150-16 STOP 76Vp-p (5usec.div.)	Q1200-1 STOP 0.4Vp-p (5usec.div.)	IC2501-22,23,25 PLAY 7.0Vp-p (2msec.div.)	IC6001-13 STILL 5.0Vp-p (5msec.div.)
				
IC6001-18 REC 5.0Vp-p (10msec.div.)	IC6001-50 REC/PLAY 2.0Vp-p (20usec.div.)	IC6001-52 REC/PLAY 2.0Vp-p (20usec.div.)	IC6001-68,69 REC 5.0Vp-p (5msec.div.)	IC6001-70 REC 5.0Vp-p (5msec.div.)
				
IC6001-71 REC 5.0Vp-p (5usec.div.)	IC6001-72 REC 5.0Vp-p (5msec.div.)	IC6001-79,80 FF/REW 5.0Vp-p (1msec.div.)	IC6001-90 REC 5.0Vp-p (10msec.div.)	IC6001-94,95 REC 6.8Vp-p (10msec.div.)
				
IC6001-97 PLAY 0.8Vp-p (10msec.div.)	IC3001-6 REC/PLAY 1.2Vp-p (0.5msec.div.)	IC3001-17 REC 1.2Vp-p (20μsec.div.)	IC3001-26 REC 0.5Vp-p (20μsec.div.)	IC3001-29 REC/PLAY 2.2Vp-p (20μsec.div.)
				
IC3001-45,46 PLAY 0.5Vp-p (20μsec.div.)	IC3001-49 PLAY 0.5Vp-p (20μsec.div.)	IC3001-73 REC/PLAY 5.0Vp-p (5msec.div.)	IC3001-74 REC/PLAY 5.0Vp-p (5msec.div.)	IC3001-80 REC/PLAY 0.5Vp-p (10msec.div.)
				
IC3001-85 PLAY 1.8Vp-p (20μsec.div.)	IC3001-86 REC 1.8Vp-p (5msec.div.)	IC3001-87 PLAY 150mVp-p (20μsec.div.)	IC3001-96 PLAY 5.0Vp-p (5msec.div.)	IC3001-98 REC 1.6Vp-p (0.5msec.div.)
				
IC4501-9,14 REC 0.4Vp-p (0.5msec.div.)	IC4501-21 REC 1.4Vp-p (20usec.div.)	IC4501-22,24 PLAY 1.4Vp-p (20usec.div.)	IC4501-53,57 REC/PLAY 1.8Vp-p (0.5msec.div.)	

◀ MAIN SIGNAL PATH IN REC MODE

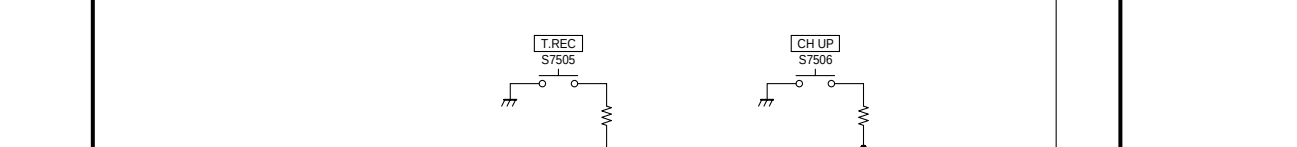
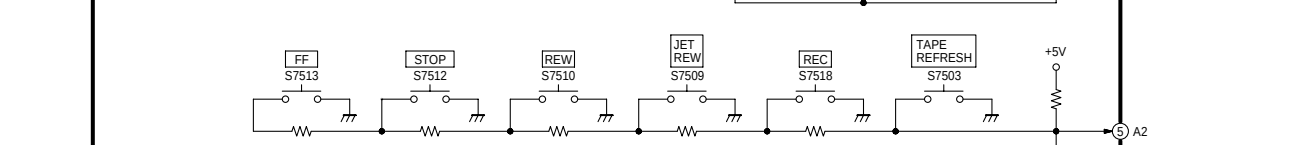
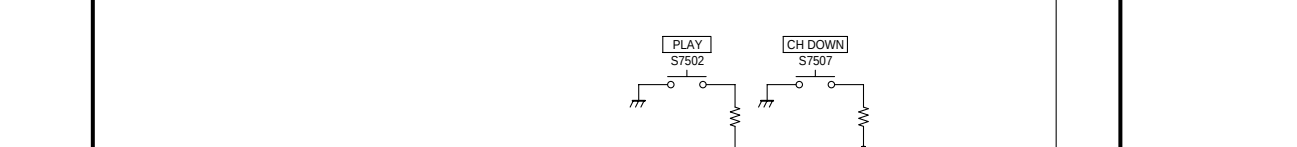
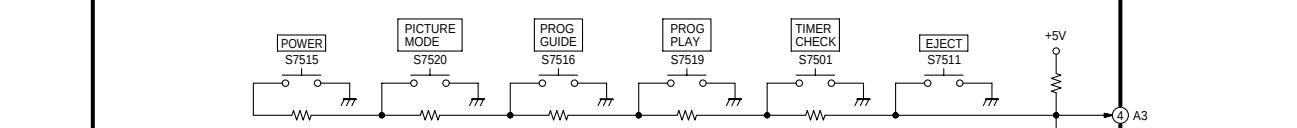
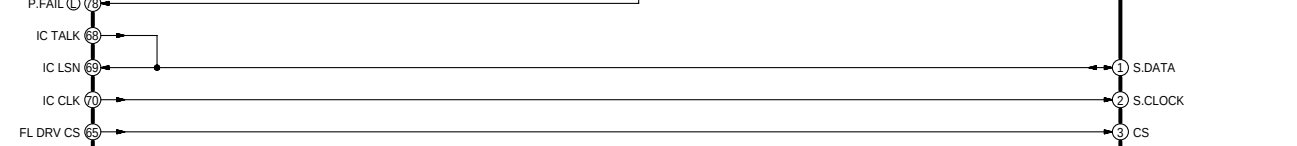
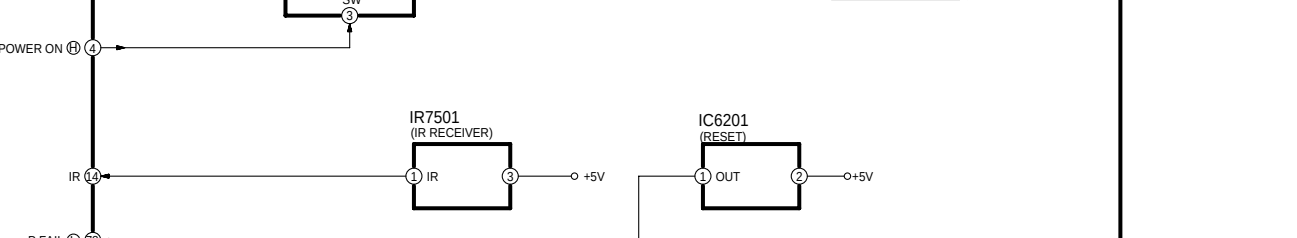
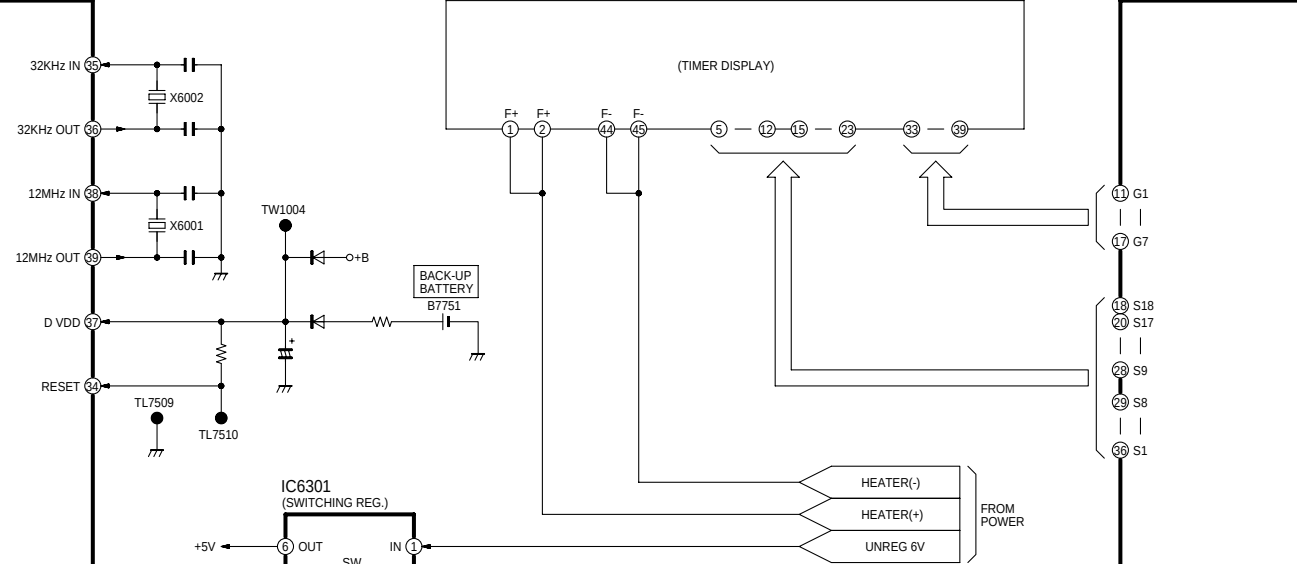
▶ MAIN SIGNAL PATH IN PLAYBACK MODE

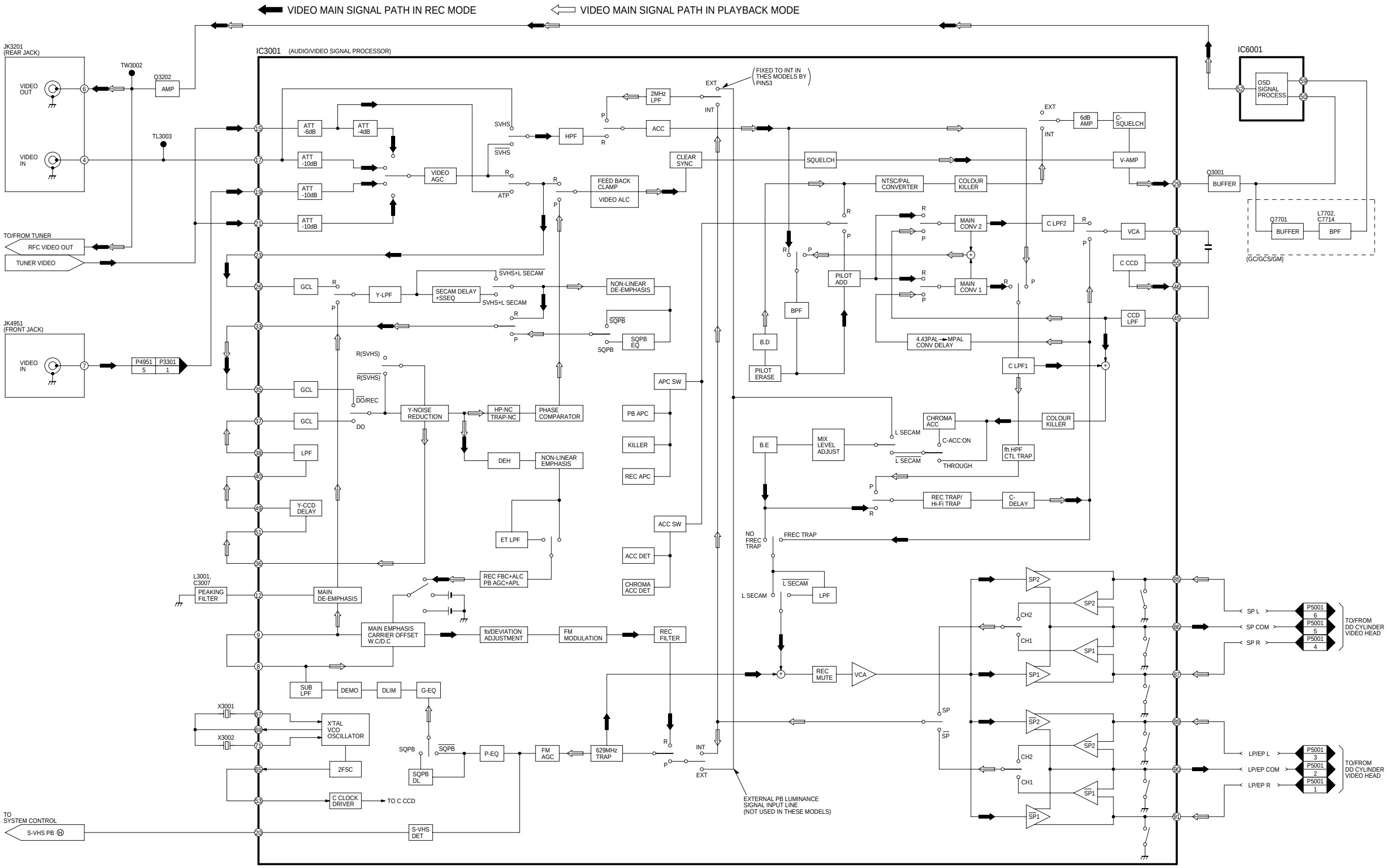


IC0201 (CAPSTAN MOTOR DRIVE) IC6001 (SYSTEM CONTROL & SERVO)

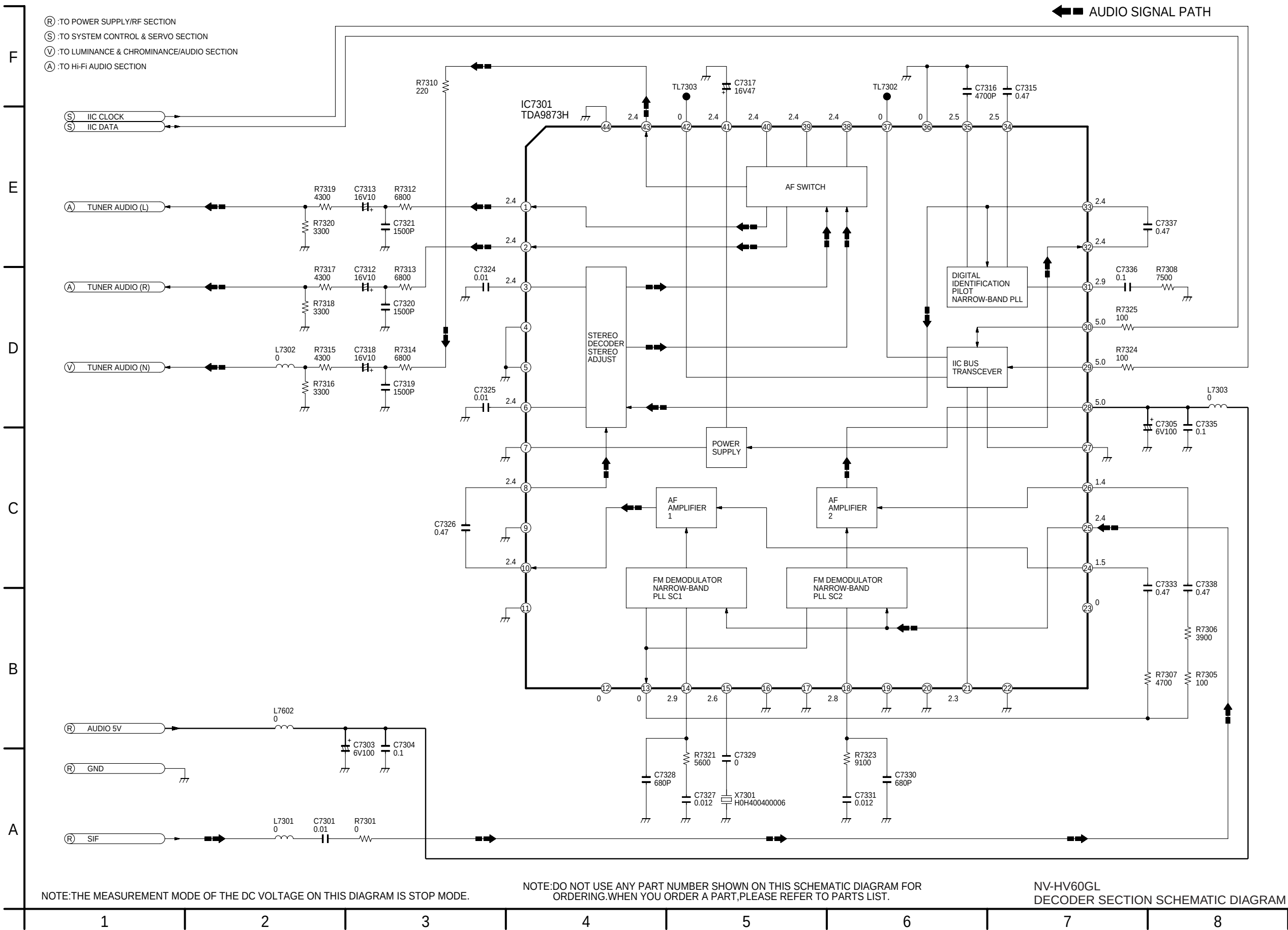


DP7501 IC7501 (FIP DRIVE)





NV-HV60GL/GC/GCS/GM
LUMINANCE & CHROMINANCE BLOCK DIAGRAM



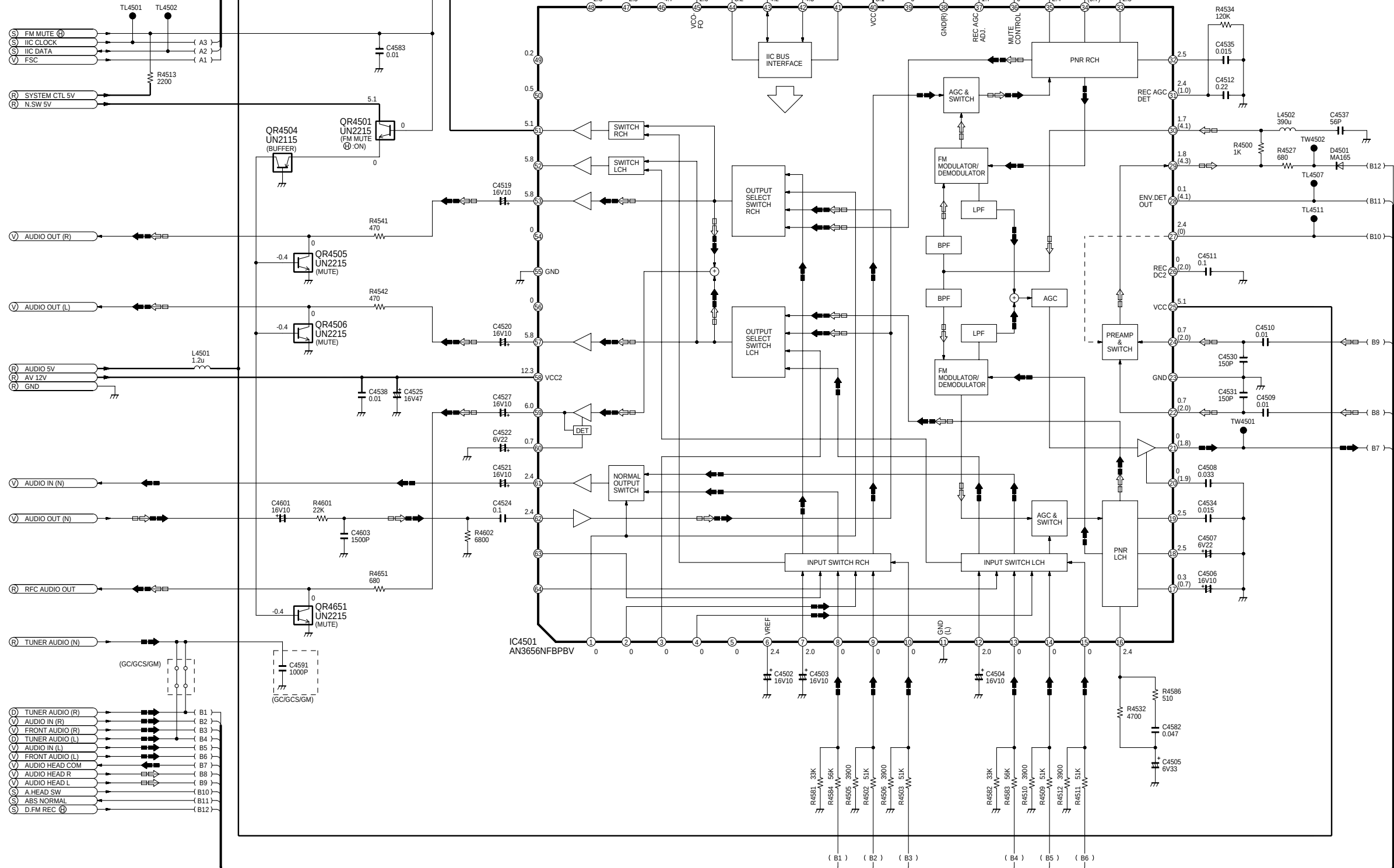
← AUDIO SIGNAL PATH

NV-HV60GL
DECODER SECTION SCHEMATIC DIAGRAM

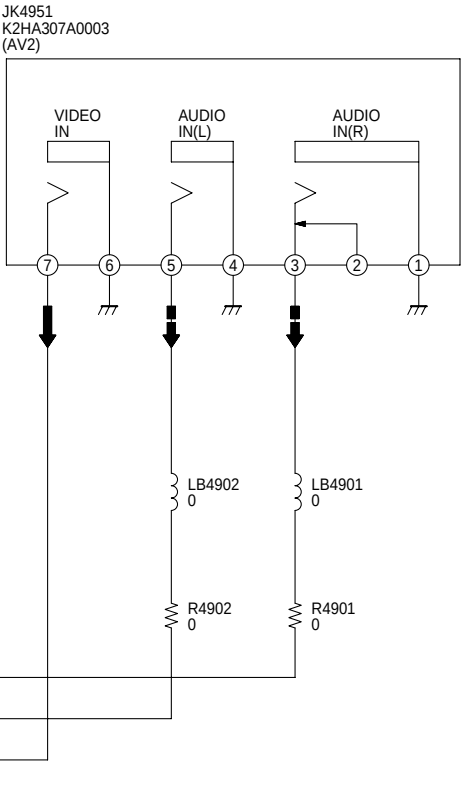
- (R) :TO POWER SUPPLY/RF SECTION
(S) :TO SYSTEM CONTROL & SERVO SECTION
(V) :TO LUMINANCE & CHROMINANCE/AUDIO SECTION
(D) :TO DECODER SECTION

← AUDIO MAIN SIGNAL PATH IN REC MODE

↔ AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE



 VIDEO MAIN SIGNAL PATH IN REC MODE
 AUDIO MAIN SIGNAL PATH IN REC MODE



TO LUMINANCE & CHROMINANCE/
AUDIO SECTION P3301(C-22)

P4951		
P3301-5	FRONT AUDIO (R)	1
P3301-4	GND	2
P3301-3	FRONT AUDIO (L)	3
P3301-2	GND	4
P3301-1	FRONT VIDEO	5

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

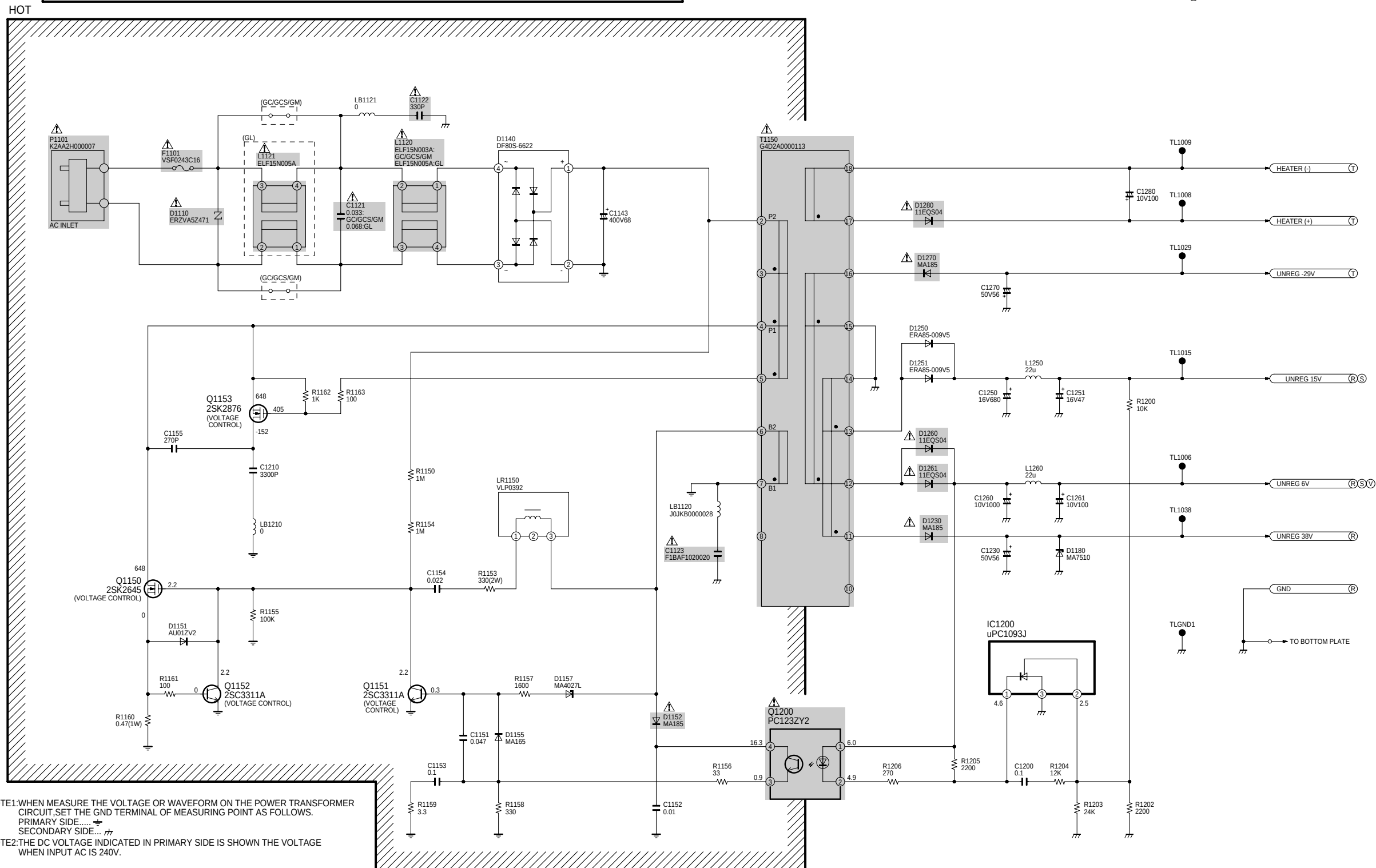
NV-HV60GL/GC/GCS/GM
FRONT SCHEMATIC DIAGRAM

1 2 3 4

CAUTION

THE STRIPED FRAME INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

Ⓡ :TO POWER SUPPLY/RF SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓣ :TO TIMER SECTION
Ⓥ :TO LUMINANCE & CHROMINANCE/AUDIO SECTION



NOTE1:WHEN MEASURE THE VOLTAGE OR WAVEFORM ON THE POWER TRANSFORMER CIRCUIT,SET THE GND TERMINAL OF MEASURING POINT AS FOLLOWS.
PRIMARY SIDE.....
SECONDARY SIDE... //

NOTE2:THE DC VOLTAGE INDICATED IN PRIMARY SIDE IS SHOWN THE VOLTAGE WHEN INPUT AC IS 240V.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚡ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,USE ONLY THE SAME TYPE.

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NV-HV60GL/GC/GCS/GM
POWER TRANSFORMER
SECTION SCHEMATIC DIAGRAM

G

F

F

D

C

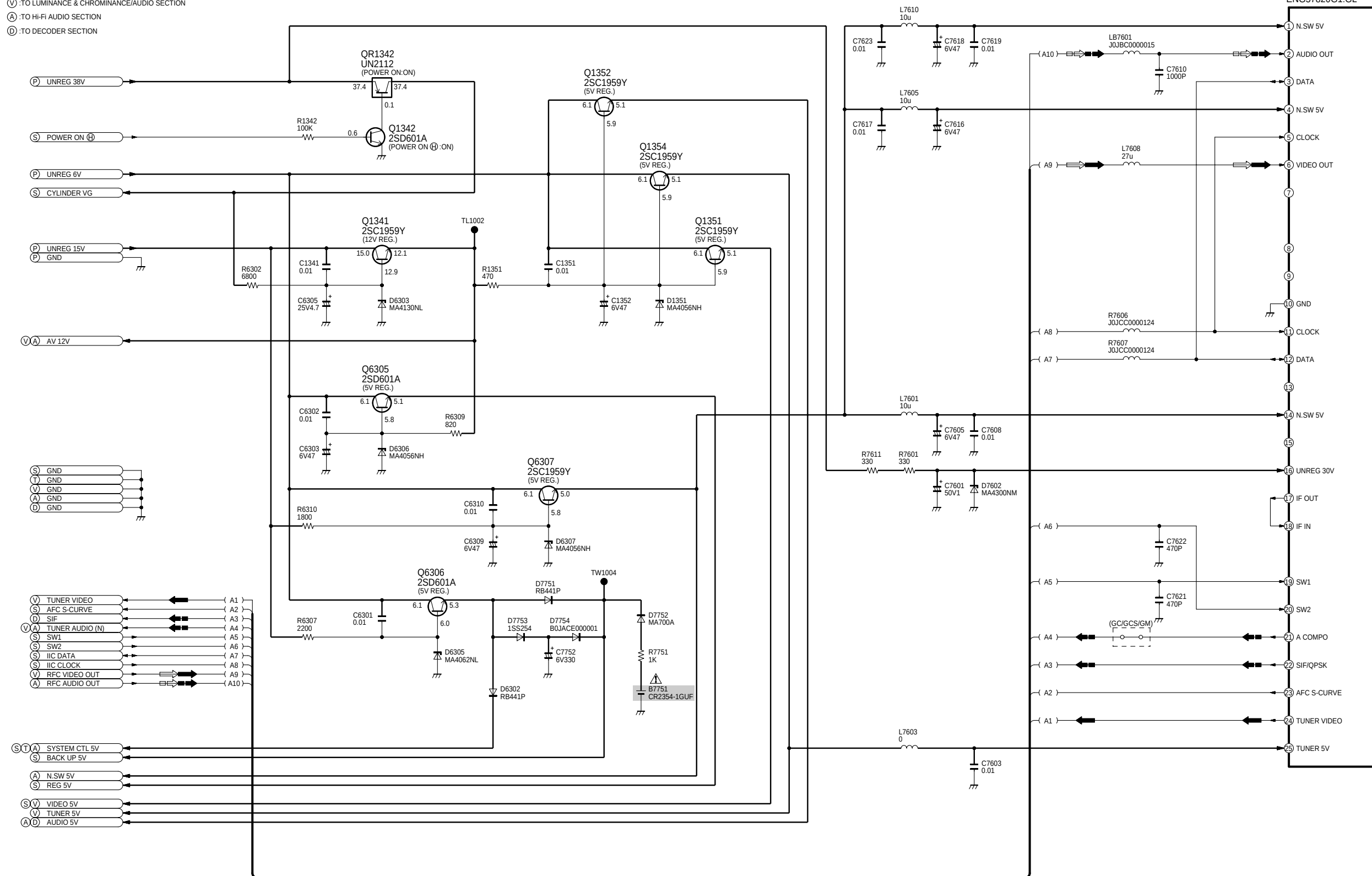
B

A

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK  HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART.PLEASE REFER TO PARTS LIST.

NV-HV60GL/GC/GCS/GM
POWER SUPPLY/RF
SECTION SCHEMATIC DIAGRAM



G
F
E
D
C
B
A

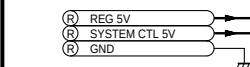
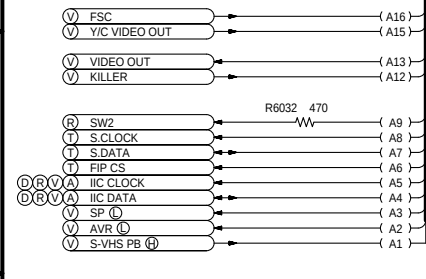
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- Ⓡ :TO POWER SUPPLY/IRF SECTION
- Ⓣ :TO TIMER SECTION
- Ⓥ :TO LUMINANCE & CHROMINANCE/AUDIO SECTION
- Ⓐ :TO HI-FI AUDIO SECTION
- Ⓢ :TO DECODER SECTION

← CAPSTAN SERVO SPEED LOOP

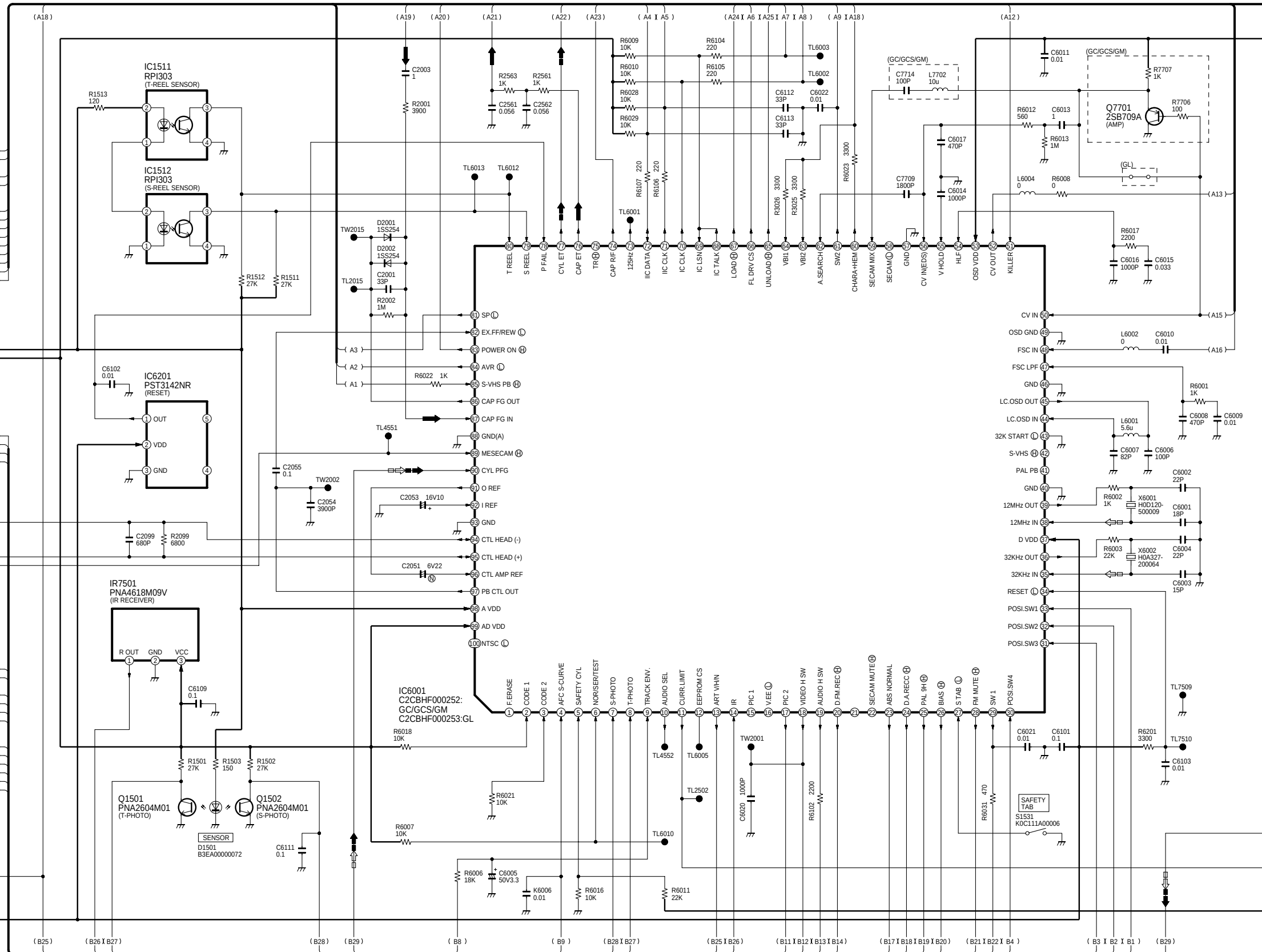
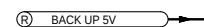
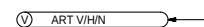
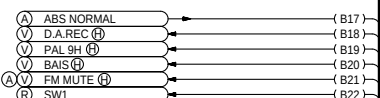
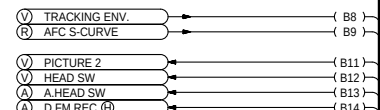
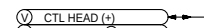
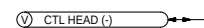
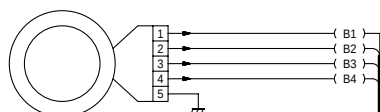
← CAPSTAN SERVO PHASE LOOP

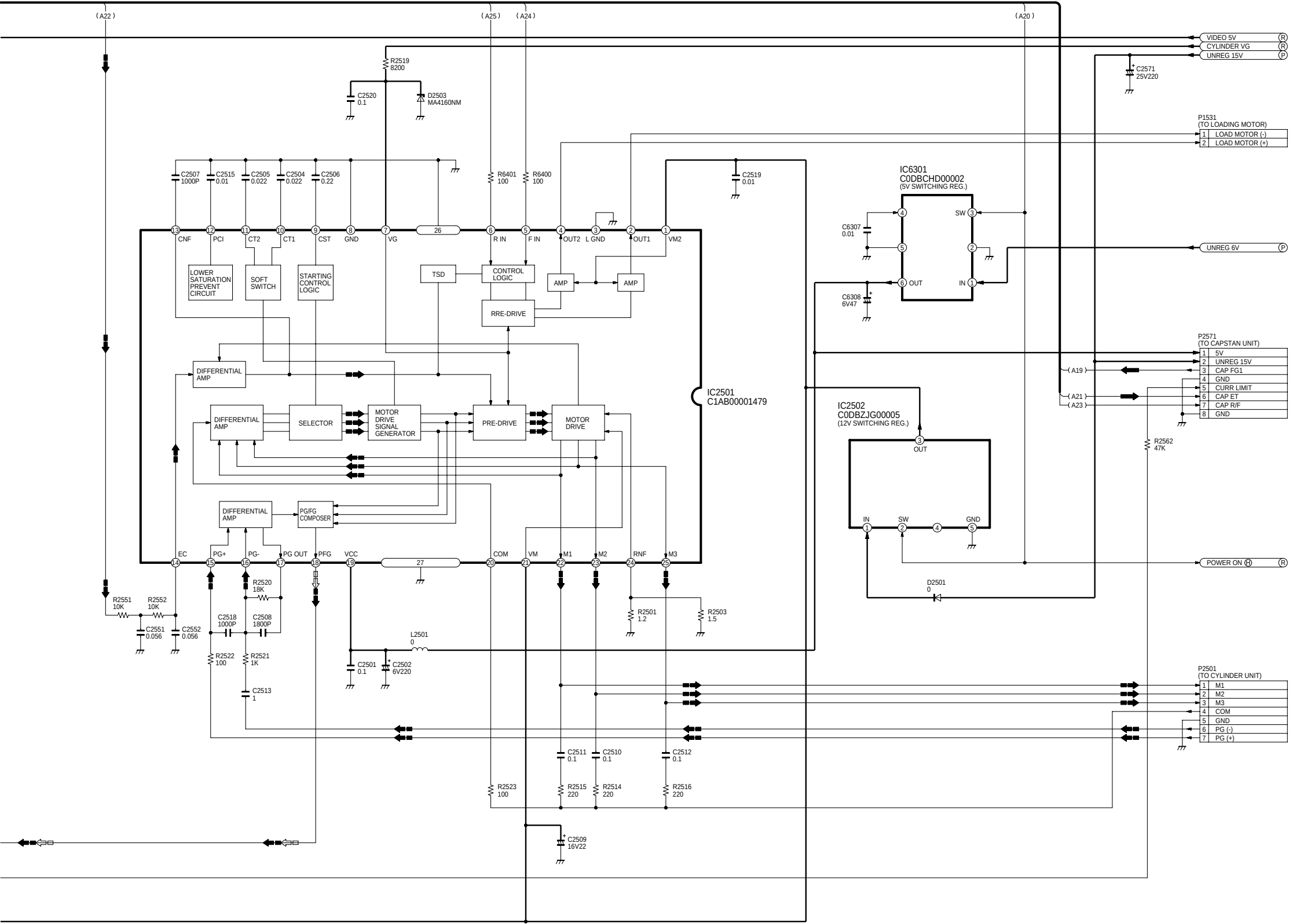
← CYLINDER SERVO SPEED LOOP

← CYLINDER SERVO PHASE LOOP



[MODE SW]
S1532
K0ZZ20000598





NV-HV60GL/GC/GCS/GM
SYSTEM CONTROL & SERVO
SECTION SCHEMATIC DIAGRAM

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR
ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-HV60GL/GC/GCS/GM
SYSTEM CONTROL & SERVO
SECTION SCHEMATIC DIAGRAM

F

E

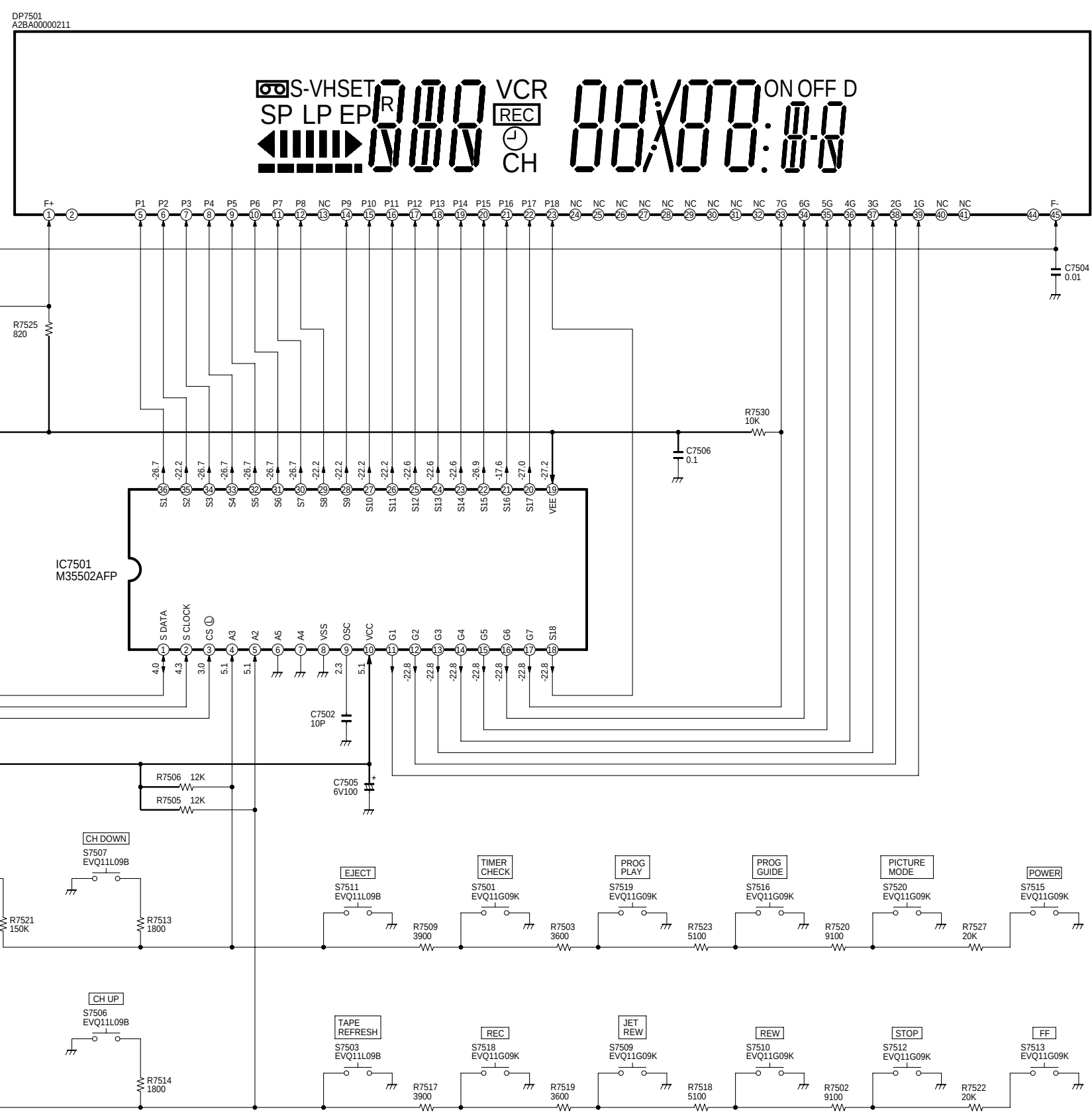
D

C

B

A

- (P) :TO POWER TRANSFORMER SECTION
- (R) :TO POWER SUPPLY/RF SECTION
- (S) :TO SYSTEM CONTROL & SERVO SECTION



NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-HV60GL/GC/GCS/GM
TIMER SECTION SCHEMATIC DIAGRAM





NV-HV60GL/GC/GCS/GM
LUMINANCE & CHROMINANCE/
AUDIO SECTION
SCHEMATIC DIAGRAM

ADDRESS INFORMATION

NV-HV60GL/GC/GCS/GM
FRONT C.B.A.



IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK **⚠** HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

CAUTION

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MAIN C.B.A.			
Transistor		Test Point	
Q1150	C-2	TL1002	A-2
Q1151	D-1	TL1006	A-2
Q1152	D-1	TL1008	A-1
Q1153	C-1	TL1009	A-1
Q1200	B-2	TL1015	A-1
Q1341	A-2	TL1029	B-1
Q1342	B-2	TL1038	B-1
Q1351	D-8	TL2015	D-3
Q1352	D-8	TL2502	B-3
Q1354	D-8	TL3002	E-4
Q1501	C-2	TL3003	E-3
Q1502	C-8	TL4501	C-7
Q3001	D-5	TL4502	C-7
Q3003	D-6	TL4503	E-4
Q3202	E-3	TL4504	F-4
Q4081	E-4	TL4505	F-3
Q4082	E-6	TL4506	F-3
Q4083	E-6	TL4507	E-7
Q4084	C-2	TL4511	E-7
Q6305	A-4	TL4551	D-7
Q6306	A-3	TL4552	D-8
Q6307	A-7	TL6001	D-4
Q7701	B-4	TL6002	B-6
Transistor & Resistor		TL6003	B-6
QR1342	B-2	TL6005	C-3
QR3001	C-6	TL6010	C-3
QR3004	E-4	TL6012	B-4
QR3008	E-5	TL6013	B-5
QR4061	E-6	TL7301	A-7
QR4081	E-6	TL7302	A-8
QR4082	B-3	TL7303	A-8
QR4501	D-8	TL7509	B-4
QR4504	D-8	TL7510	B-4
QR4505	D-8	TLGND1	A-1
QR4506	E-8	TW1004	A-3
QR4651	E-8	TW2001	D-9
Integrated Circuit		TW2015	D-9
IC1200	B-2	TW3001	D-9
IC1511	B-4	TW4501	E-8
IC1512	B-6	TW4502	D-8
IC2501	D-3	Connector	
IC2502	E-2	P1101	E-1
IC3001	E-5	P1531	F-3
IC4501	E-7	P2501	F-2
IC6001	C-4	P2571	E-4
IC6201	D-4	P3301	B-9
IC6301	D-3	P4001	D-8
IC7301	B-8	P4002	E-4
IC7501	A-6	P5001	E-6
		TU7601	E-9

ADDRESS INFORMATION

No	Terminal Name	I/O	Description	P.OFF	P.Failure	Reset/ Release										
1	NC	I	Hi-Z fix.	In	In	In										
2	CODE1	I	AD input terminal for model setting.	In	In	In										
3	CODE2	I	AD input terminal for model setting.	In	In	In										
4	T.S.CUREVE	I	Input terminal for "S-Curve" of Tuner AFC at channel selecting.	In	In	In										
5	CYLREG_SHORT	I	REG 12V short detection signal. It is a measure for cylinder driver over heat by short. Perform detection process at 3 seconds after that the P.ON (H) signal at Pin 83 of IC6001 has been shifted from Low to High. [Detection method] When the terminal voltage is less than 3.0V during 3 seconds continuously, the power is turned off compulsorily. * When a cassette is in, the power is turned off after a few second delay for the mechanism initial function. * Key/Remote controller input is inhibited while the compulsory power off process.	In	In	In										
6	NORM/SERV/T2/TES	I	Factory mode/ Service mode setting terminal. <table border="1"><tr><td>Input Voltage</td><td>Mode</td></tr><tr><td>Over 4.0V</td><td>Normal</td></tr><tr><td>Over 2.0V and less than 4.0V</td><td>Service</td></tr><tr><td>Over 1.0V and less than 2.5V</td><td>Test 2</td></tr><tr><td>Less than 1.0V</td><td>Test 1</td></tr></table>	Input Voltage	Mode	Over 4.0V	Normal	Over 2.0V and less than 4.0V	Service	Over 1.0V and less than 2.5V	Test 2	Less than 1.0V	Test 1	In	In	In
Input Voltage	Mode															
Over 4.0V	Normal															
Over 2.0V and less than 4.0V	Service															
Over 1.0V and less than 2.5V	Test 2															
Less than 1.0V	Test 1															
7	S-PHOT	I	Input terminal of the Tape End sensor detection. *More than 2.6V : Black tape part. *Less than 2.4V :Trans. Tape part.	In	In	In										
8	T-PHOT	I	Input terminal of the Tape Beginning sensor detection. *More than 2.6V : Black tape part. *Less than 2.4V :Trans. Tape part.	In	In	In										
9	TRACKING_ENVE	I	Input terminal of the Video envelope signal.	In	In	In										
10	NC	O	Low fix.	Low	Low	Low										
11	CURRENT.LIMIT	O	Control terminal for the Capstan current limit. (Output impedance: MIN:1K, TYP:2.5K, MAX:4.0K)	In DA=0V	Low	In DA=0V										
12	EEPROM_CS	O	Chip Select terminal for NAVI Data backup EEPROM. *Active Low output.	High	Low	Low										
13	ART.V/H/N	O	Output terminal for the Artificial V-sync. 1. In trick playback. Artificial V sync inserting timing : High Artificial H sync inserting timing : Hi-Z (M output) Except above conditions : Low 2. NAVI REC : Hi-Z 3. OSD REC : Hi-Z 4. Other than above conditions : Low	Low	Low	Low										
14	REMOCON	I	Input terminal for the Remote Controller.	In	In	In										
15	PICT1	O	Control terminal for the Picture mode.	Low	Low	Low										
16	NC	O	Low fix.	Low	Low	Low										
17	PICT2	O	Control terminal for the Picture mode.	Low	Low	Low										
18	VIDEO.H.SW	O	Video head switching signal *L'/R="High" *R'/L="Low"	Low	Low	Low										
19	AUDIO.H.SW	O	Head switching signal for Audio circuit.	Low	Low	Low										
20	D.FM.REC	O	Recording control signal for Hi-Fi Audio signal. *REC, INSERT, AV INSERT:"High" is output. (Rec on) *Other than above condition: "Low" is output. (Rec off) *From L to H: Switching timing of this signal is synchronized with the HSW edge just after switching timing of "D33 of IC3001 = 0 to 1". (The delay is within 1 edge) *From H to L: When Editing, this switching timing is before the switching timing of "D33 of IC3001 = from 1 to 0" by 60 +- 10msec in SP mode, by 100 +- 10msec in LP/EP mode. When normal rec mode, this switching timing is before the switching timing of "D33 of IC3001 = from 1 to 0" by 0 ~ 150msec.	Low	Low	Low										
21	R_COLE_W (L)	O	Write protection releasing terminal for RAM correction EEPROM. *During ROM correction data being Written: "Low" is output. *Other than above condition: Hi-Z.	Hi-Z	Hi-Z	Hi-Z										

No	Terminal Name	I/O	Description	P.OFF	P.Failure	Reset/ Release																																																																	
22	NC	O	Low fix.	Low	Low	Low																																																																	
23	ABS_NORMAL	I	This terminal has two purposes. 1.Compulsory Normal Audio selection. 2.Trigger for Audio auto Adjustment. *Compulsory Normal Audio sel.:"Low" level. (ADUBPS/HiFi_Audio envelope being low.) *Other than above : "High" level.	In	In	In																																																																	
24	D.A.REC(H)	O	Recording control signal for the Linear Audio.	Low	Low	Low																																																																	
25	PAL 9H (H)	O	PAL 9H: High is output.	Low	Low	Low																																																																	
26	BIAS(H)	O	Linear Audio REC/ERASE ON/OFF control terminal. (FULL ERASE ON/OFF control is combined with) *When recording the linear audio, the "Low" is output synchronizing with D.REC signal for IC3001. Output mode: REC(ADUB/AV-INSERT) *When the recording starts, "High" is output at 130-150m sec. after D.REC (H) for IC3001has been shifted to "High" from "Low". *When the recording stops, the "Low" is output. *Other than above: "Low" Level.	Low	Low	Low																																																																	
27	STAB(L)	I	SAFETY TAB DETECTION *With SAFETY TAB: "Low" *Without SAFETY TAB:"High"	In	In	In																																																																	
28	FM_MUTE	O	Audio mute control terminal. High output (AUDIO MUTE). The voltage is shifted to Hi-Z for reucing the current at 3 second after the power has been turned on .	Hi-Z	In	In																																																																	
29	SW1	O	AUDIO SYSTEM (TUNER PRESET)=BG, I: High output AUDIO SYSTEM (TUNER PRESET)=DK, M: Low output For A: High fix.	Low	Low	Low																																																																	
30	POS.SW4	I	Input terminal for mechanism position. <table border="1"><thead><tr><th>SW4</th><th>SW3</th><th>SW2</th><th>SW1</th><th>Position Name</th></tr></thead><tbody><tr><td>1</td><td>1</td><td>1</td><td>0</td><td>EJECT Position</td></tr><tr><td>0</td><td>0</td><td>1</td><td>0</td><td>DOWN Position</td></tr><tr><td>0</td><td>0</td><td>1</td><td>1</td><td>R-REW Position</td></tr><tr><td>0</td><td>1</td><td>0</td><td>0</td><td>LOAD Position</td></tr><tr><td>0</td><td>1</td><td>0</td><td>1</td><td>REV Position</td></tr><tr><td>0</td><td>1</td><td>1</td><td>0</td><td>PLAY Position</td></tr><tr><td>0</td><td>1</td><td>1</td><td>1</td><td>P_OFF Position</td></tr><tr><td>1</td><td>0</td><td>0</td><td>0</td><td>STOP_R Position</td></tr><tr><td>1</td><td>0</td><td>0</td><td>1</td><td>STOP_F Position</td></tr><tr><td>1</td><td>1</td><td>0</td><td>0</td><td>FF/REW Position</td></tr><tr><td>1</td><td>1</td><td>1</td><td>0</td><td>FF2 Position</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>Intermediate Positions between each Positions</td></tr></tbody></table>	SW4	SW3	SW2	SW1	Position Name	1	1	1	0	EJECT Position	0	0	1	0	DOWN Position	0	0	1	1	R-REW Position	0	1	0	0	LOAD Position	0	1	0	1	REV Position	0	1	1	0	PLAY Position	0	1	1	1	P_OFF Position	1	0	0	0	STOP_R Position	1	0	0	1	STOP_F Position	1	1	0	0	FF/REW Position	1	1	1	0	FF2 Position	1	1	1	1	Intermediate Positions between each Positions	In	In	In
SW4	SW3	SW2	SW1	Position Name																																																																			
1	1	1	0	EJECT Position																																																																			
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1	1	1	0	FF2 Position																																																																			
1	1	1	1	Intermediate Positions between each Positions																																																																			
31	POS.SW3	I		In	In	In																																																																	
32	POS.SW2	I		In	In	In																																																																	
33	POS.SW1	I		In	In	In																																																																	
34	RESET	I	RESET Terminal.	In	In	In																																																																	
35	32KHz.IN	I	Sub clock (32.768KHz) osc. input terminal.	In	In	In																																																																	
36	32KHz.OUT	O	Sub clock (32.768KHz) osc. output terminal	Out	Out	Out																																																																	
37	5V(D)	-	VCC (5V) for Digital port	-	-	-																																																																	
38	12MHz.IN	I	Main clock (12MHz) osc. input terminal.	In	In	In																																																																	
39	12MHz.OUT	O	Main clock (12MHz) osc. output terminal.	Out	Out	Out																																																																	
40	GND(OSC)	-	Digital GND for OSC circuit.	-	-	-																																																																	
41	PAL PB (L)	O	3.58NTSC (D6=0, D7=0 both of IC3001): High output Other than above : Low output	Low	Low	Low																																																																	

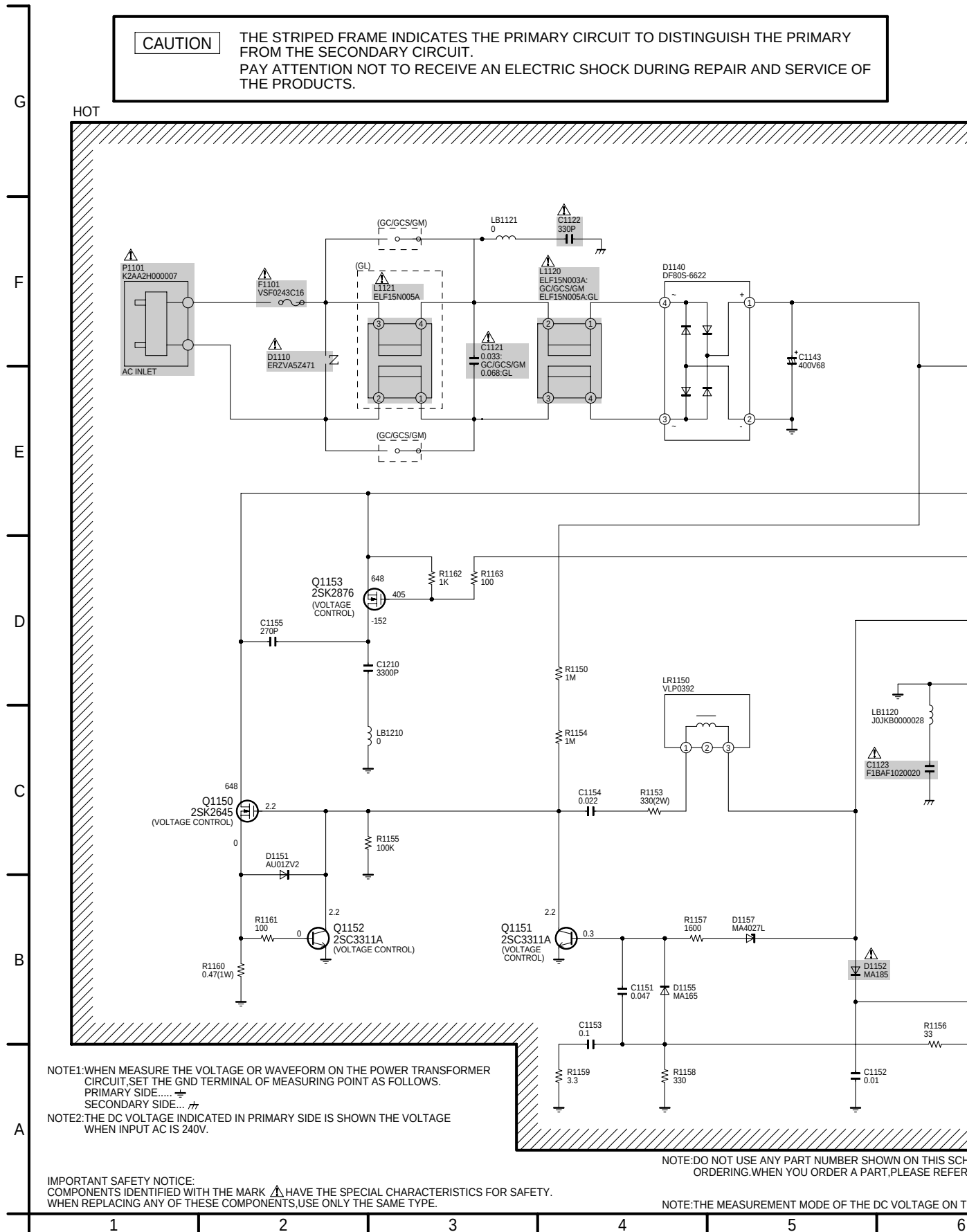
No	Terminal Name	I/O	Description	P.OFF	P.Failure	Reset/ Release
42	PAL_SQPB	O	50Hz Playback on SQPB: High output Other than above : Low output	Low	Low	Low
43	32K.START(L)	I	Clock souce selection terminal at reset starting. *12/16MHz(High speed) :Connected to VCC (5V). *32KHz(Slow speed) :Connected to Vss (0V).	In	In	In
44	LC.OSC.IN	I	Input terminal of the LC Oscillation (For OSD dot clock)	In	In	In
45	LC.OSC.OUT	O	Output terminal of the LC Oscillation (For OSD dot clock)	Out	Out	Out
46	GND	-	Connected to the GND (Test terminal "B" in the factory).	-	-	-
47	FSC.LPF	I	OSC Filter connection terminal for Internal sync generator.	In	Low	In
48	FSC.IN	I	Sub carrier (fsc) input terminal for sync generator.	In	Low	In
49	GND(OSD)	-	GND terminal for OSD circuit.	-	-	-
50	CVIN	I	Input terminal for composite video signal.	In	In	In
51	KILLER	I	When a signal that V-sync is 50Hz is putting in or playing back. * PAL/MESECAM distinction result input terminal. Low is put into this terminal: PAL High is put into this terminal: Dipend on MESECAM H /SECAM DET input terminal. When a NTSC signal is putting in. * Input terminal for distinction result of agreement between Fsc of input signal and frequency of OSC for sub-carrier that being chosen by IC3001. Low is put in: Agree High is put in: Different	In	In	In
52	CVOUT	O	Output terminal for the composite video signal.	Out	Out	Out
53	5V(OSD)	-	Power supply terminal for OSD	-	-	-
54	HLF	I	LPF connection terminal for slicer.	In	In	In
55	VHOLD	I	Capacitor connection terminal of the Reference voltage generator circuit for the slicer.	In	In	In
56	CVIN(EDS)	I	Composite video signal input terminal for the slicer.	In	In	In
57	GND	-	Connect to the GND (Test terminal "A" in the factory).	-	-	-
58	NC	O	Low fix.	Low	Low	Low
59	SECAM MIX (For other than NV-HV60GL)	I	SECAM CHROMA signal input terminal for SECAM SIGNAL SUPER IMPOSE.	Low	Low	Low
	NC (For NV-HV60GL)	O	Low fix.	Low	Low	Low
60	CHARA + HEM	O	OSD REC control terminal. 1. During OSD REC. *During OSD character is output (Including Hemming): "High" is output. *Output than above condition: "Low" is output. 2. Other than OSD REC: High-Z.	Hi-Z/Low	Hi-Z/Low	Hi-Z/Low
61	SW2	O	(For NV-HV60GL) High fix. (For other than NV-HV60GL) AUDIO SYSTEM = BG, DK: High is output. AUDIO SYSTEM = I, M: Low is output.	Low	Low	Low
62	A.SEARCH (L)	I/O	AGC gain selection signal for tuner CH selection. During digital AFC is working at TUNER PRESET mode: Low (AGC is high speed). Other than above: Hi-Z (AGC is normal speed).	Low	Low	Low
63	VBI2	O	NAVI writing terminal. * During NAVI data being written (During recording when JET NAVIGATOR is ON). OSD letters (Including the masking) being written : High Except OSD letters being written : Low * Other than above: Hi-z	Low / Hi-Z	Low / Hi-Z	Low / Hi-Z

No	Terminal Name	I/O	Description	P.OFF	P.Failure	Reset/ Release
64	VBI1/CHARA	O	Terminal for both NAVI Writing and OSD REC Writing. 1. During NAVI writing (During recording in JET NAVIGATOR is ON) At NAVI data "H" being written : High is output At NAVI data "L" being written : Low is output At except NAVI data being written : Low is output 2. During OSD REC (During recording in OSD REC is ON) During OSD letters (Except the masking) being written : High is output Except OSD letters being written : Low * Other than above condition : Hi-z	Low / Hi-Z	Low / Hi-Z	Low / Hi-Z
65	UNLOADING(H)	O	Control terminal for the Unloading operation.	Low	Low	Low
66	FLD_CS	O	Chip select signal for FIP driver. *Active: "Low" *Non-active: "High"	(Normal ope.)	Low	Low
67	LOADING(H)	O	Control terminal for the loading operation.	Low	Low	Low
68	IC.DATA.OUT	O	Timer-Bus signal for peripheral ICs control: Data output	(Normal ope.)	In	Hi-Z
69	IC.DATA.IN	I	Timer-Bus signal for peripheral ICs control: Data input	(Normal ope.)	In	In
70	IC.DATA.CLK	O	Timer-Bus signal for peripheral ICs control:Clock outout	(Normal ope.)	In	Hi-Z
71	IIC.CLK	O	Serial communication terminal (IIC) for IC3001/FM audio IC.	(Normal ope.)	In	Hi-Z
72	IIC.DATA	I/O	Serial communication terminal (IIC) for IC3001/FM audio IC.	(Normal ope.)	In	Hi-Z
73	125Hz/ROM.CORE	O	ROM Correction confirmation mode: * ROM correction setting bit is "ON": "High". * ROM correction setting bit is "OFF": "Low" is existed. (Other than ROM Correction confirmation mode, this terminal is the output terminal of internal clock for main clock adjustment.:Outputting the 125Hz.)	(Normal ope.)	Low	Low
74	CAP R/F	O	The rotation direction control terminal of the capstan driver. *RVS="High" *FWD="Low".	Low	Low	Low
75	NC	O	Low fix.	Low	Low	Low
76	CAP.ET	O	Power supply terminal for the capstan motor control. (Compared with the driver reference voltage, when it is "low", current will be cut. Also when it is "high", the rotation speed will be accelerated.)	High PWM=0V	Low	High PWM=0V
77	CYL.ET	O	Power supply terminal of the cylinder motor control: (Compared with the driver reference voltage, when it is "high", current will be cut. Also when it is "low", the rotation speed will be accelerated. (Max:2.8V))	Low PWM=2.800 V	Low	Low PWM=2.800 V
78	P.FAIL(L)	I	Input terminal for the power failar detection. Power failar : "Low".	In	In	In
79	S.REEL.PULSE	I	Input terminal of the S.Reel pulse.	In	In	In
80	T.REEL.PULSE	I	Input terminal of the T.Reel pulse.	In	In	In
81	SP(L)	O	REC MODE DATA *N2H/P3H:"Low" *N4H/N6H/N10H/P6H/P9H:"High"	Low	Low	Low
82	EX.FF/REW (L)	I/O	Control signal filter select terminal in FF/REW mode. *During FF/REW: Hi-Z *Except FF/REW: Low	Low	Low	Low
83	P.ON(H)	O	ON/OFF control terminal for the VCR Power. Power_ON : "High"	Low	Low	Low
84	AVR (L)	I/O	Simplified AI playback ON/OFF control.	Low	Low	Low
85	SQPB (H)	I	The distinction results whether S-VHS or VHS of the playback tape is input in VV mode. **"Low" is input: VHS tape playback. **"High" is input: S-VHS tape playback. NOTE: When the MESECAM (H) terminal receives "High", above result is invalidated and the tape is judged to VHS tape playback. *In case of model having SQPB function, ON/OFF setting of SQPB is performed with above result, Envelope voltage and result wheather the CTL pulse exists not. *In case of model not having SQPB function, above result is disregarded, and the VCR is always set to SQPB = off.	In	In	In
86	FG.AMP.OUT	O	Output terminal for the Capstan FG AMP signal.	Out	Out	Out
87	FG.AMP.IN	I	Input terminal for the Capstan FG AMP signal.	In	In	In
88	GND(A)	-	GND for Analogue circuit.	-	-	-

No	Terminal Name	I/O	Description	P.OFF	P.Failure	Reset/ Release
89	MESECAM (H)	I	Distinction terminal for the Video system. 1. In the VV mode. **"High" is input: Playback of a MESECAM recorded tape. **"Low" is input: Playback of other than MESECAM recorder tape. 2. In the EE mode. **"High" is input: Receiving a SECAM broadcast, or a SECAM signal is input. NOTE: *In case of model having MESECAM / SECAM REC/PLAY, the video system is controlled with above result. *In case of model do not having MESECAM / SECAM REC/PLAY, the above result is invalidated.	In	In	In
90	CYL.PFG	I	Input terminal for the Cylinder PG/FG.	In	In	In
91	OREF	O	1/2 VDD reference voltage output terminal for the Analogue AMP.	Out	Out	Out
92	IREF	I	1/2 VDD reference voltage input terminal for the Analogue AMP.	In	In	In
93	GND	I	GND	In	In	In
94	CTL.HEAD(-)	I/O	I/O terminal for the Control head (-)	In/Out	In/Out	In/Out
95	CTL.HEAD(+)	I/O	I/O terminal for the Control head (+)	In/Out	In/Out	In/Out
96	CTL.AMP.REF	I	Capacitor connection terminal for reference of the control AMP.	In	In	In
97	PB.CTL.OUT	O	Output terminal for the Control AMP.	Out	Out	Out
98	5V(A)	-	Power supply terminal for Analogue AMP.	-	-	-
99	5V(AD)	-	Reference power supply terminal for the AD/8bit DA	-	-	-
100	NTSC (L)	O	PLAYBACK MODE.....50Hz:"High" 60Hz:"Low"	Low	Low	Low

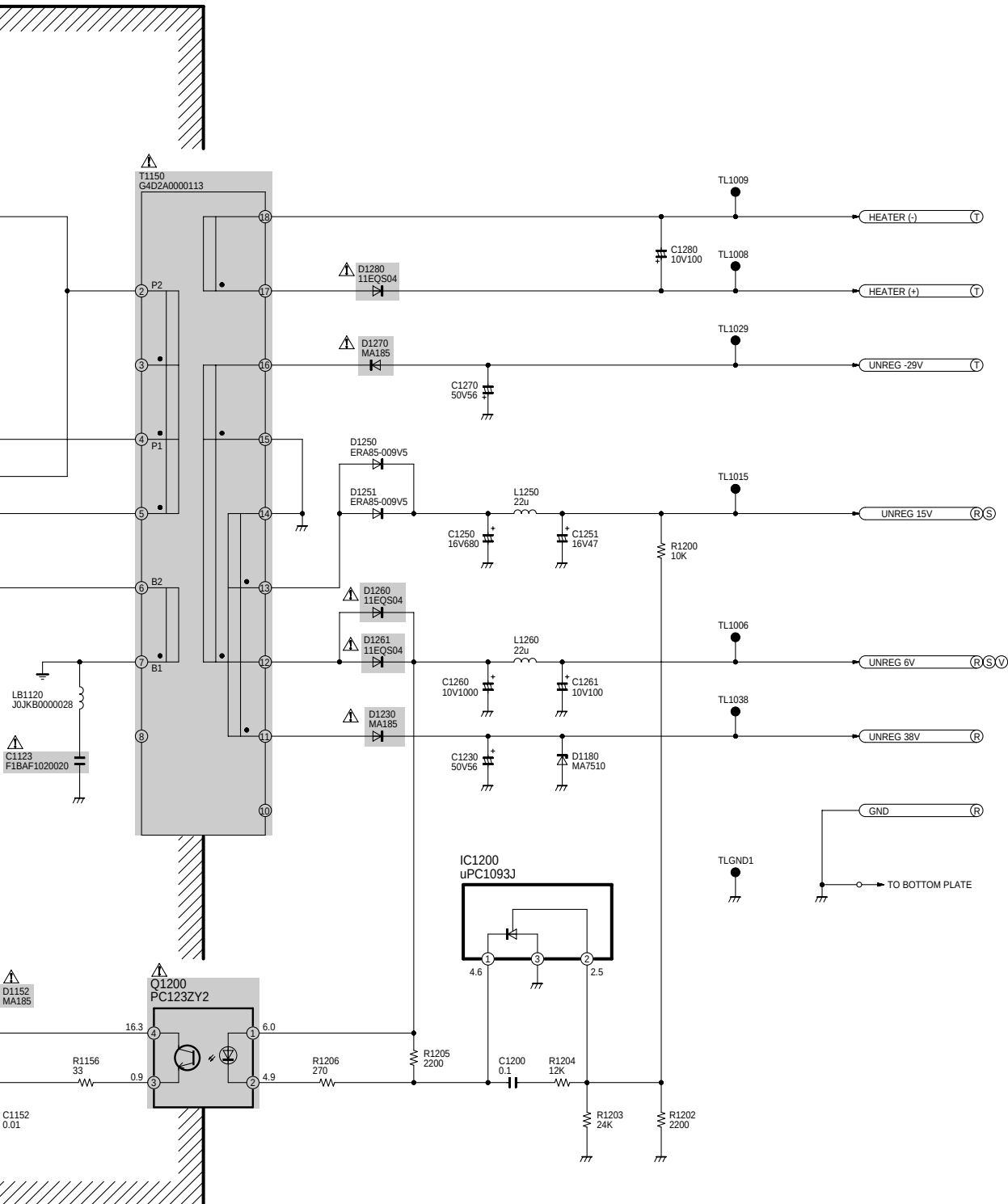
8 SCHEMATIC DIAGRAMS

8.1. POWER TRANSFORMER SECTION IN MAIN SCHEMATIC DIAGRAM



F

- (R) :TO POWER SUPPLY/RF SECTION
 (S) :TO SYSTEM CONTROL & SERVO SECTION
 (T) :TO TIMER SECTION
 (V) :TO LUMINANCE & CHROMINANCE/AUDIO SECTION

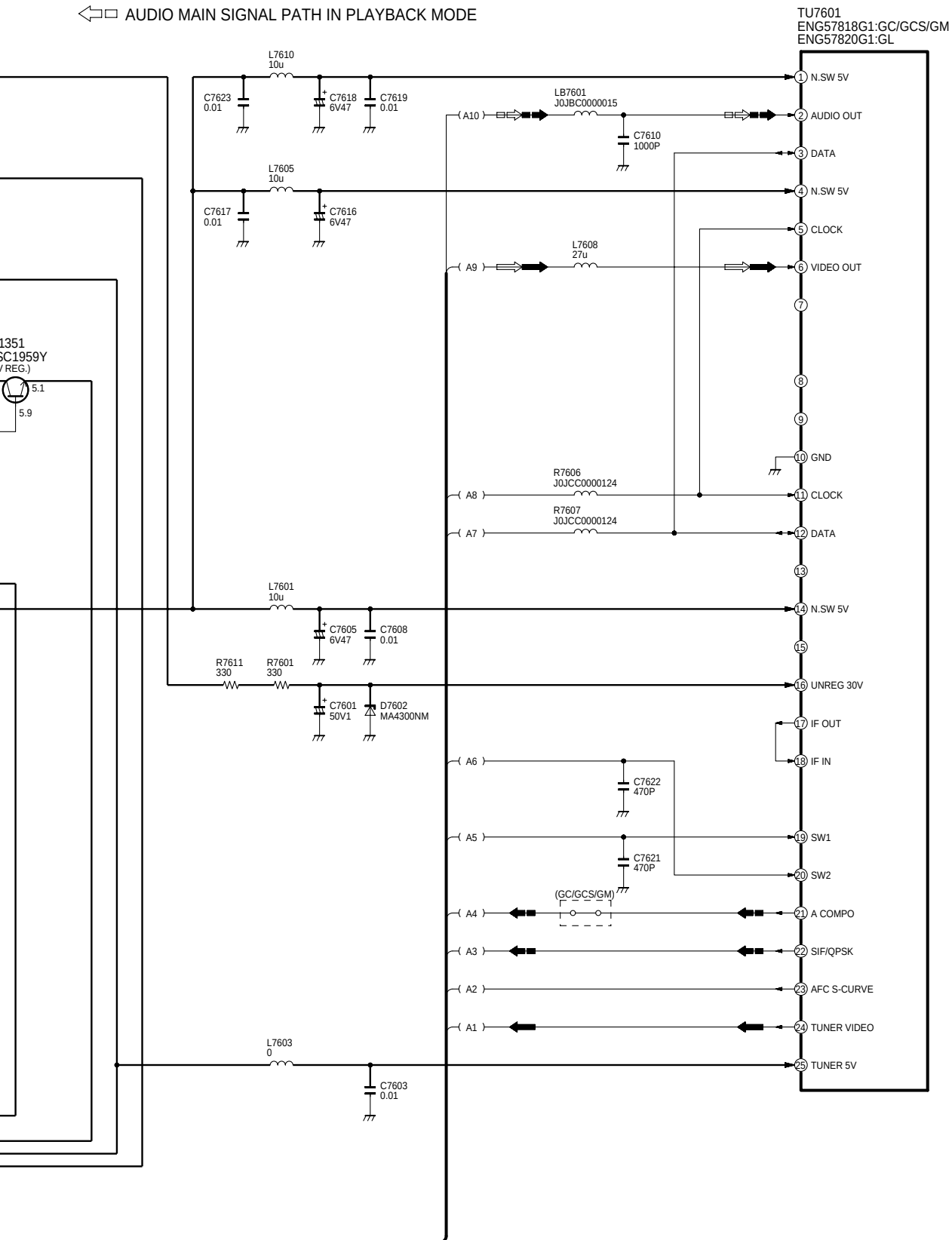




NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAC

◀▶ AUDIO MAIN SIGNAL PATH IN REC MODE

◀▶ AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE



NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-HV60GL/GC/GCS/GM
POWER SUPPLY/RF
SECTION SCHEMATIC DIAGRAM

STAGE ON THIS DIAGRAM IS STOP MODE.

6

7

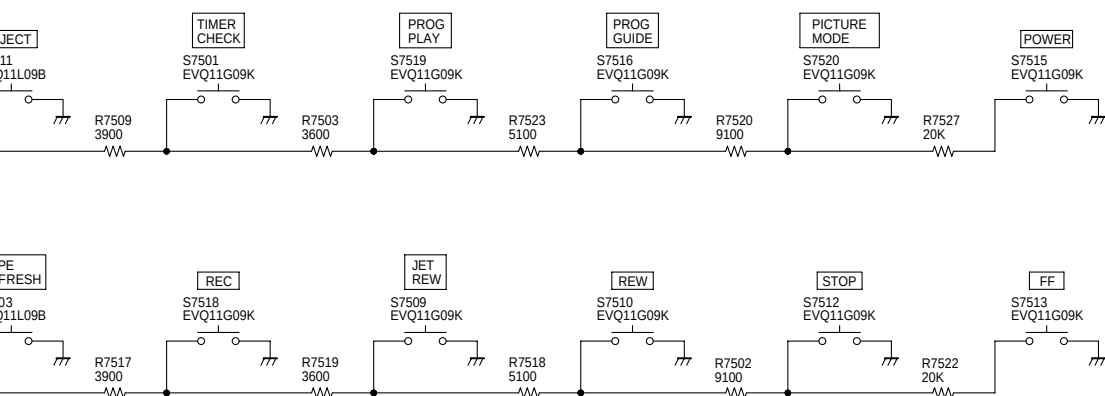
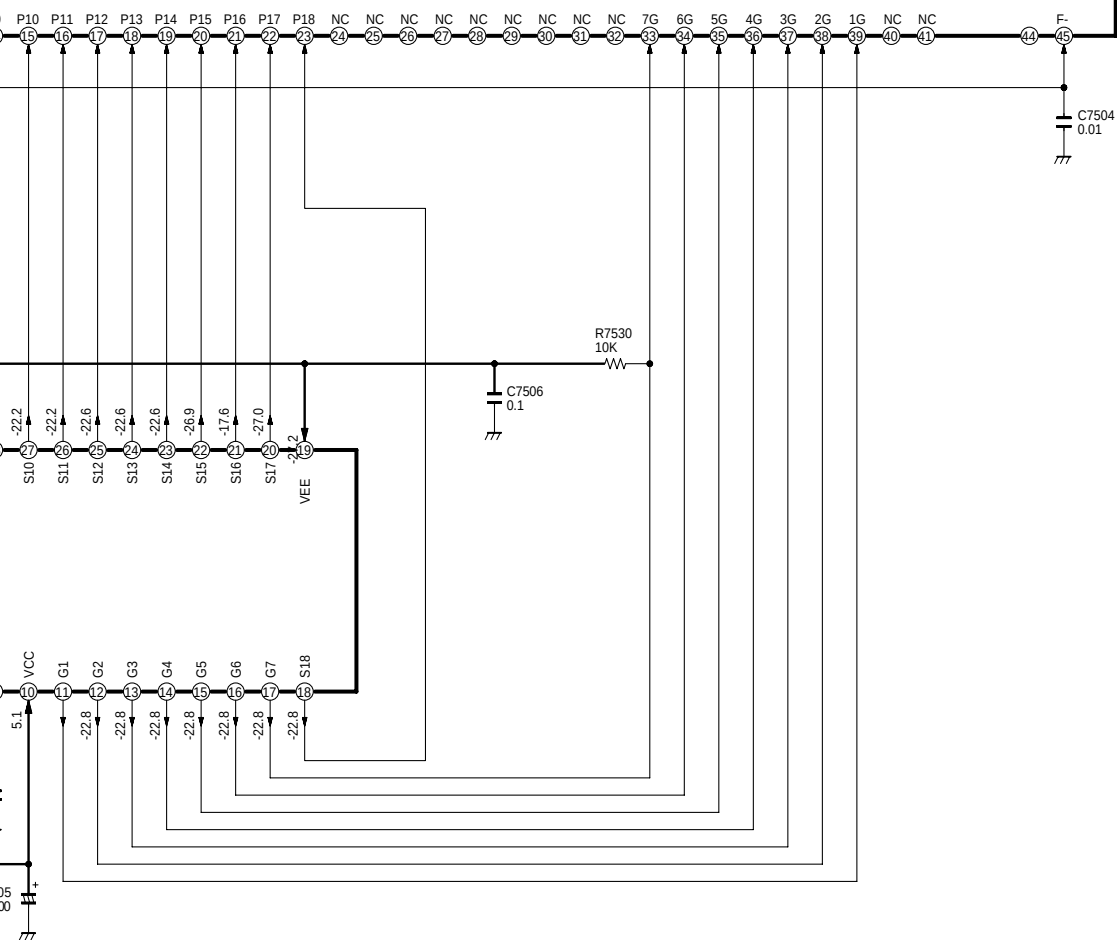
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9

10



ET
EP
VCR
REC
CH
ON OFF D



NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR
A PART, PLEASE REFER TO PARTS LIST.

NV-HV60GL/GC/GCS/GM
TIMER SECTION SCHEMATIC DIAGRAM

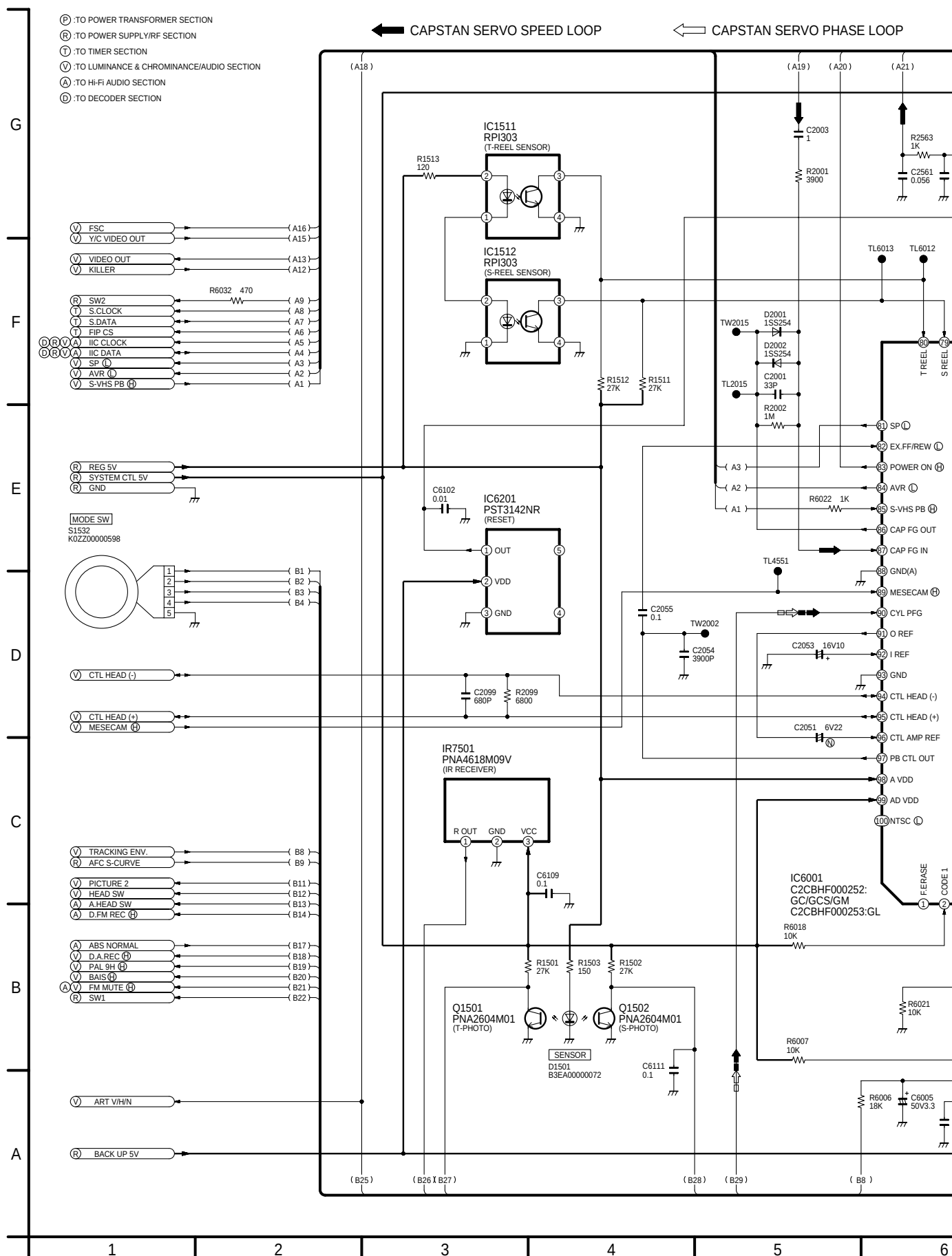
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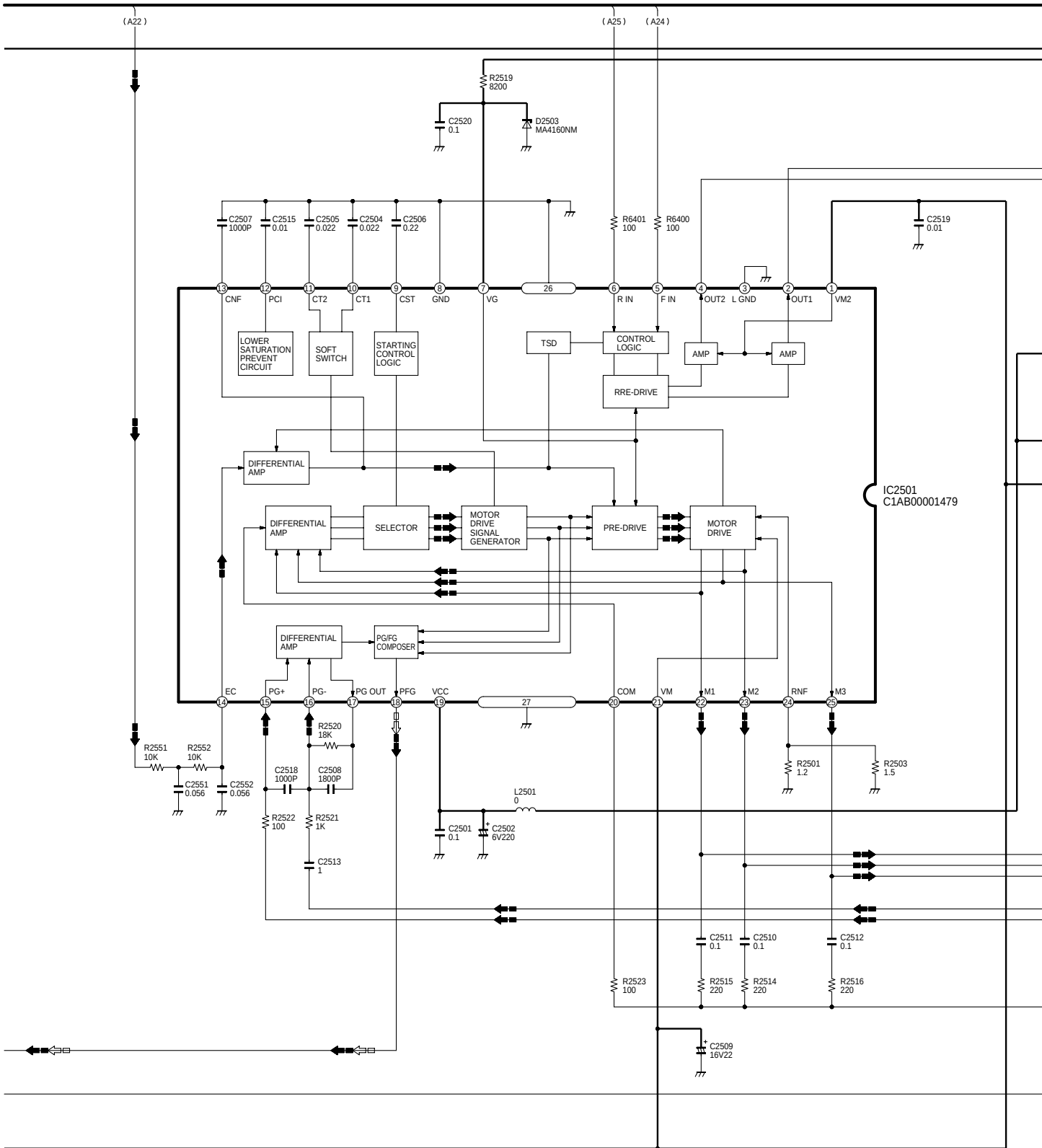
8.4. SYSTEM CONTROL & SERVO SECTION IN MAIN SCHEMATIC DIAGRAM



CYLINDER SERVO SPEED LOOP

CYLINDER SERVO PHASE LOOP





NV-HV60GL/GC/GCS/GM
SYSTEM CONTROL & SERVO
SECTION SCHEMATIC DIAGRAM

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM
ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST

12

13

14

15

16

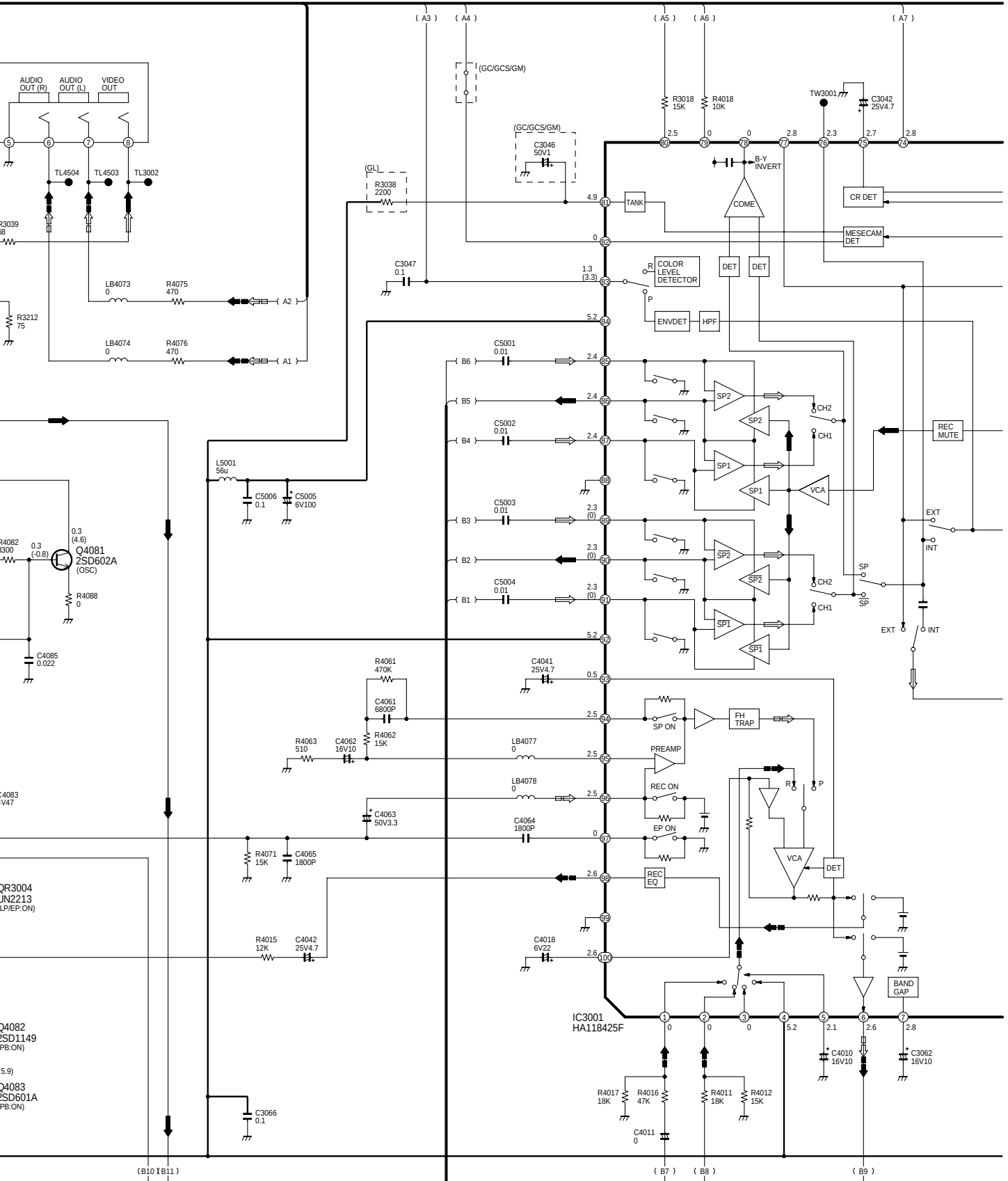
17

C DIAGRAM

MAIN SIGNAL PATH IN PLAYBACK MODE

AUDIO MAIN SIGNAL PATH IN REC MODE

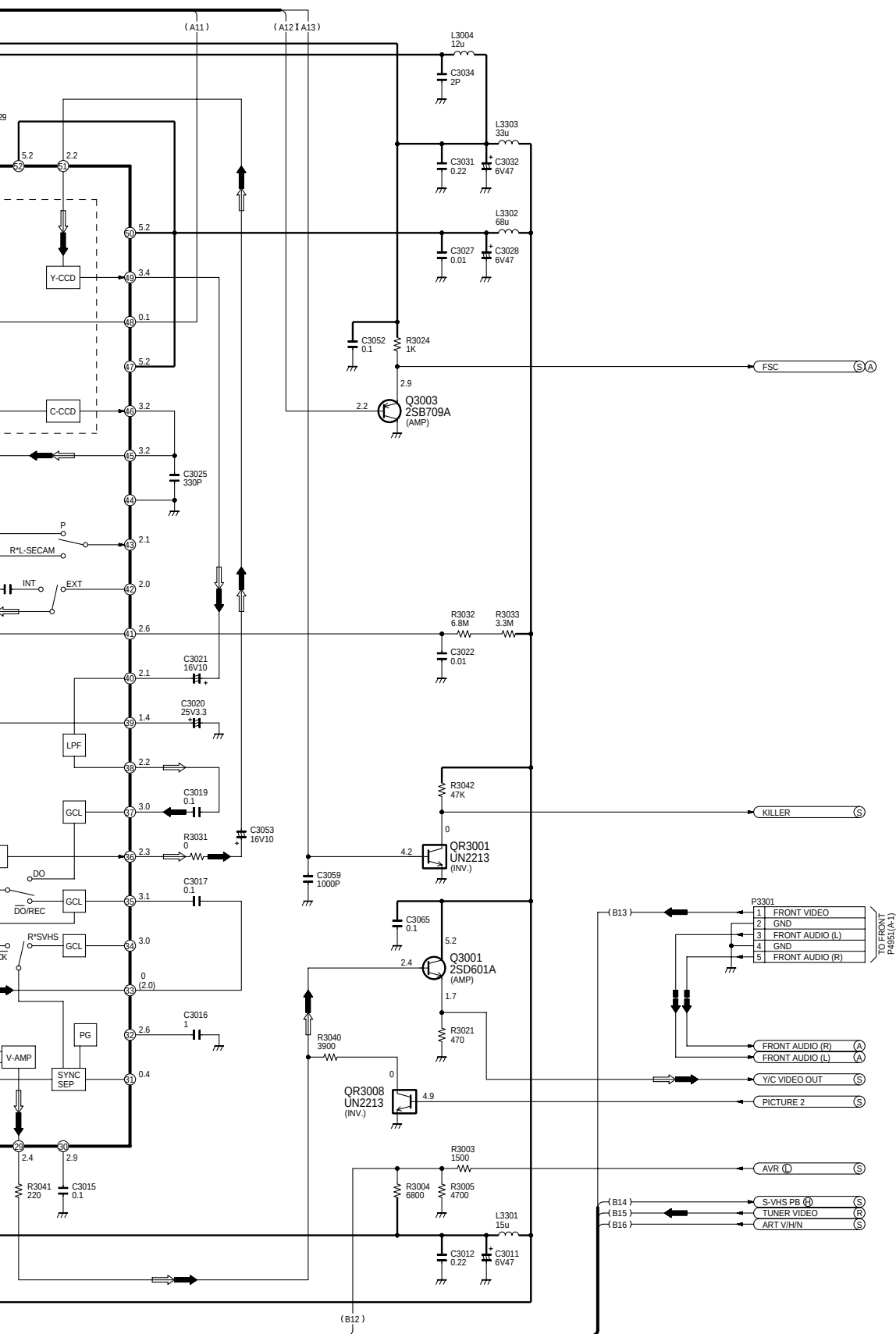
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE



MENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE
OUR SIGNAL (SP MODE)

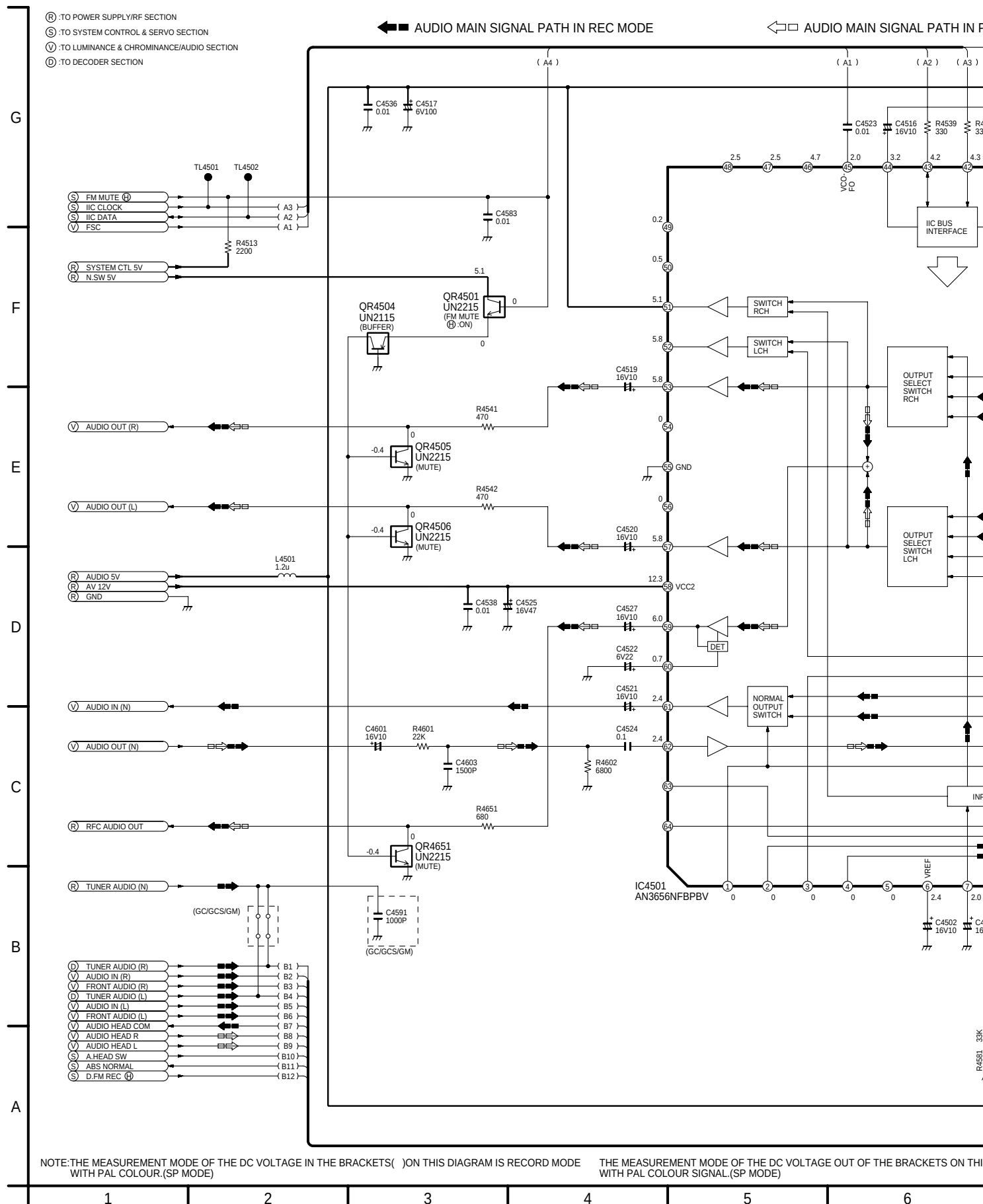
NV-HV60GL/GC/GCS/GM
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM

5 6 7 8 9 10 11

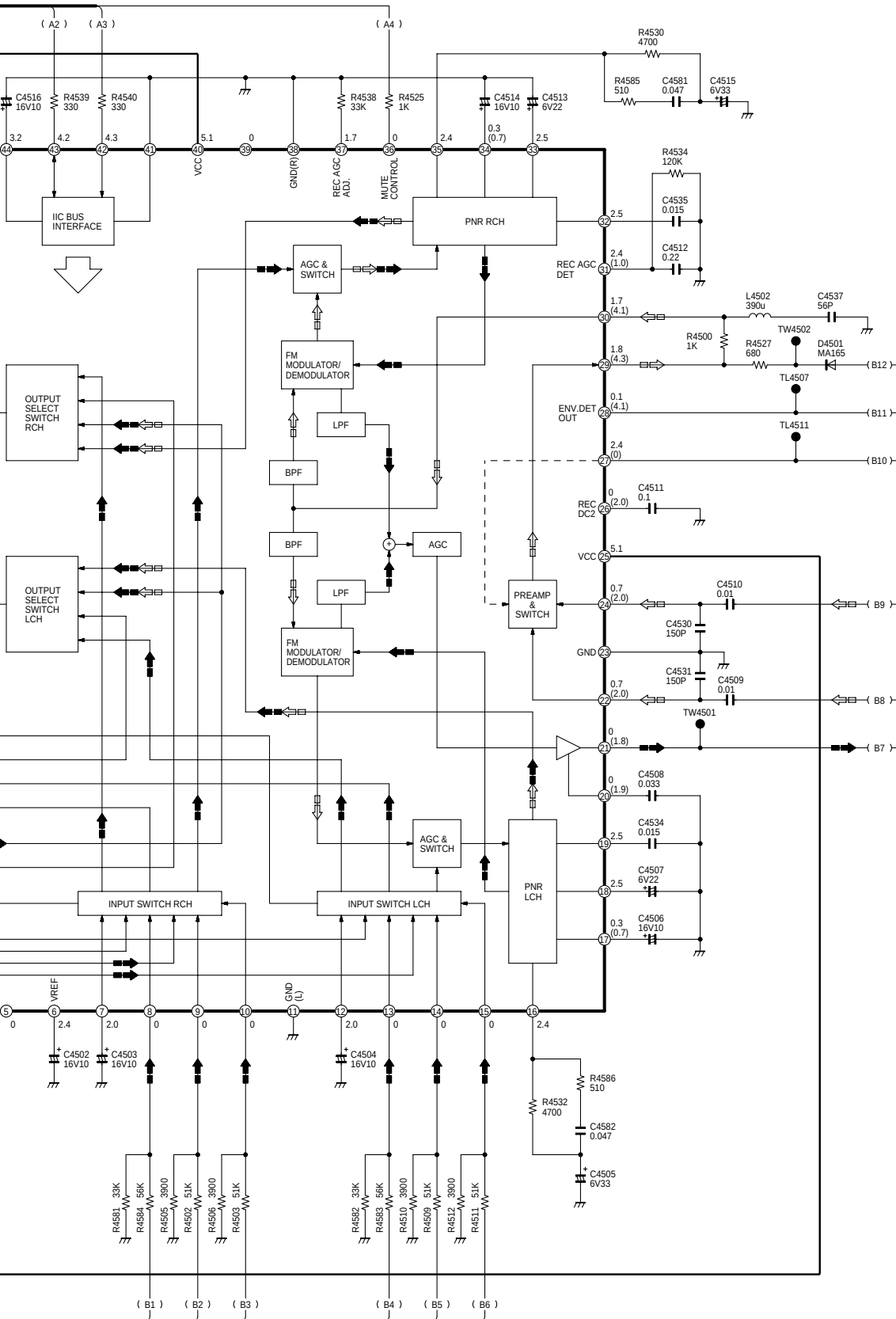


NV-HV60GL/GC/GCS/GM
LUMINANCE & CHROMINANCE/
AUDIO SECTION
SCHEMATIC DIAGRAM

8.6. Hi-Fi AUDIO SECTION IN MAIN SCHEMATIC DIAGRAM



SIGNAL PATH IN PLAYBACK MODE

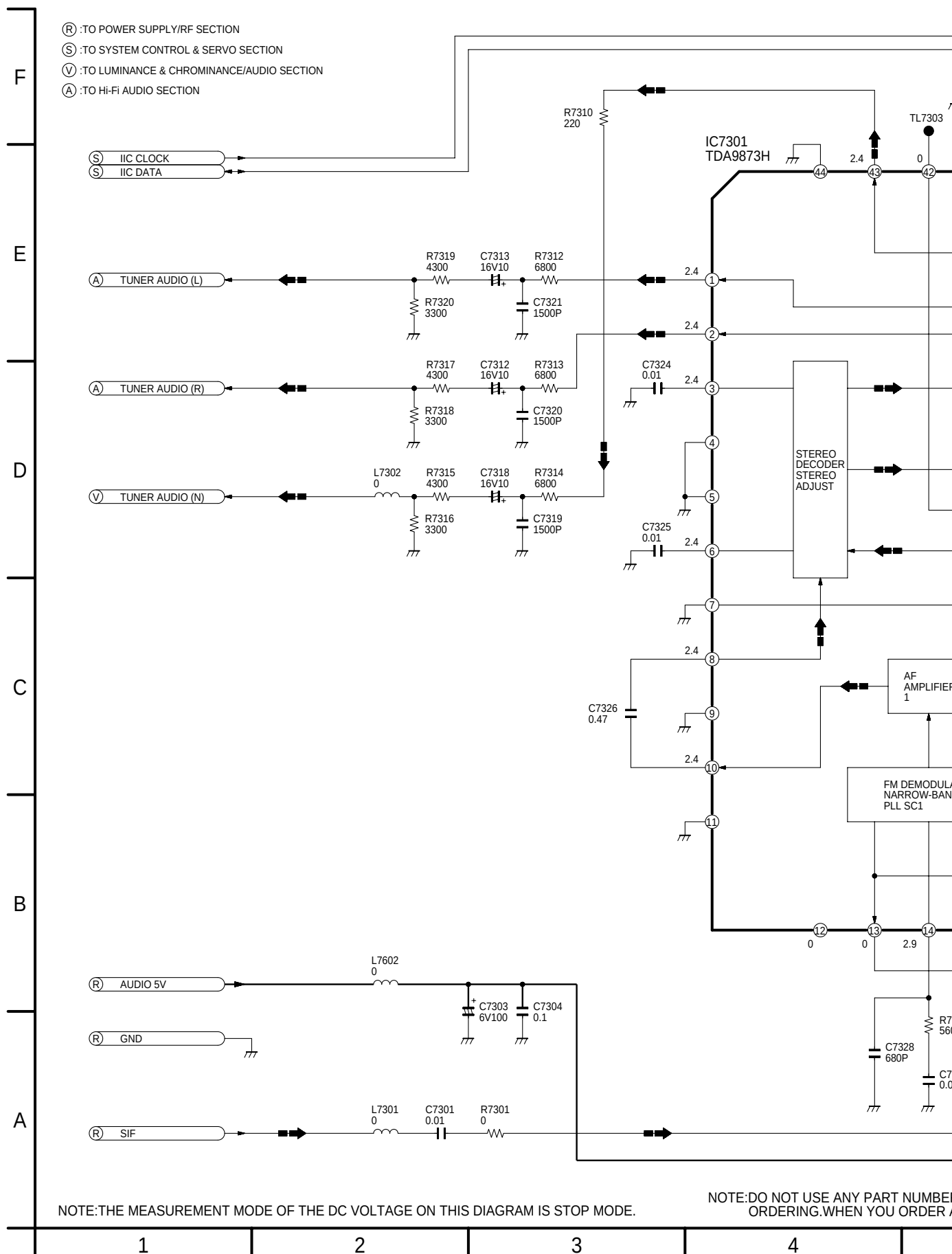


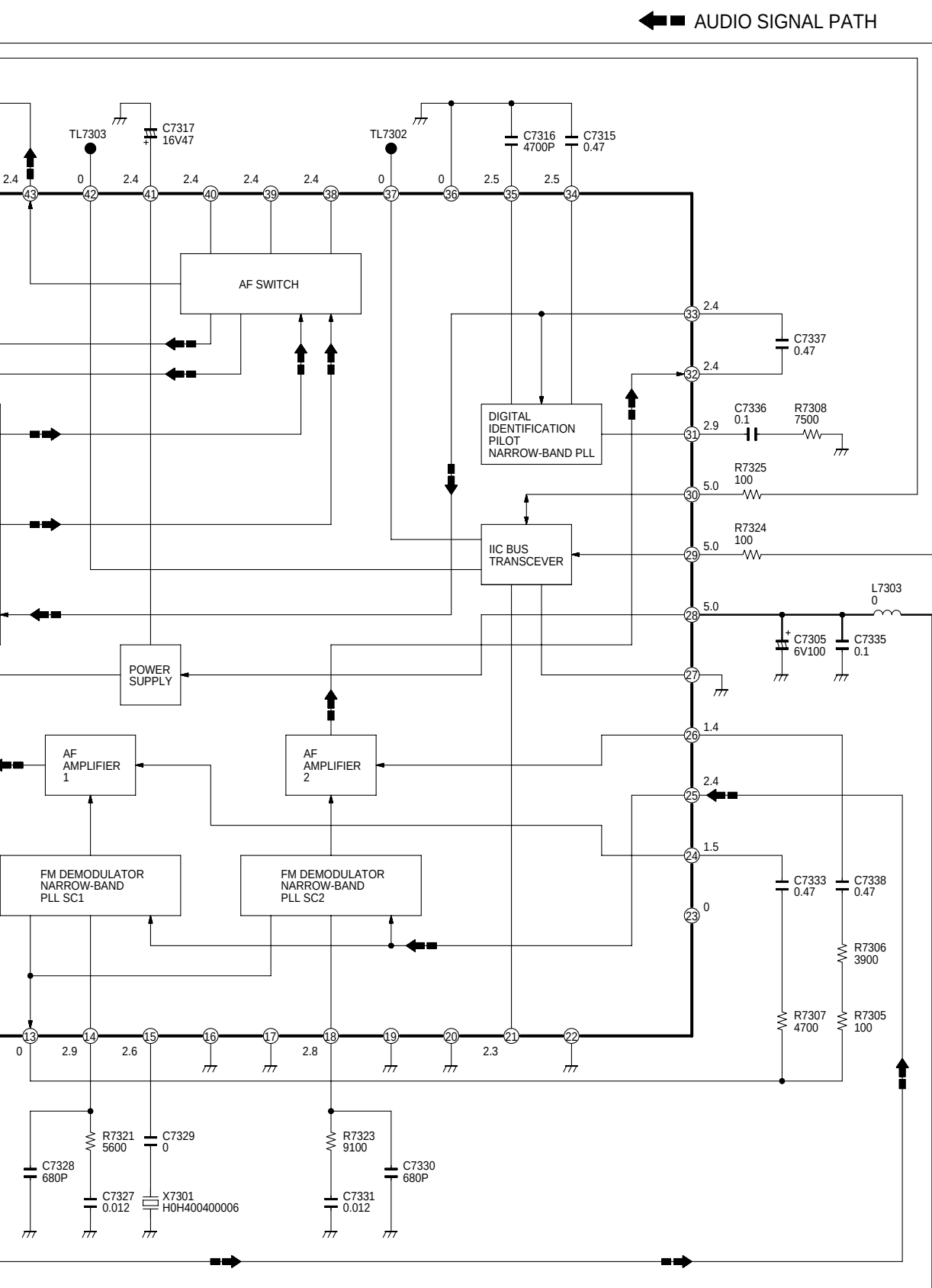
THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-HV60GL/GC/GCS/GM
Hi-Fi AUDIO SECTION SCHEMATIC DIAGRAM

8.7. DECODER SECTION IN MAIN SCHEMATIC DIAGRAM (NV-HV60GL)

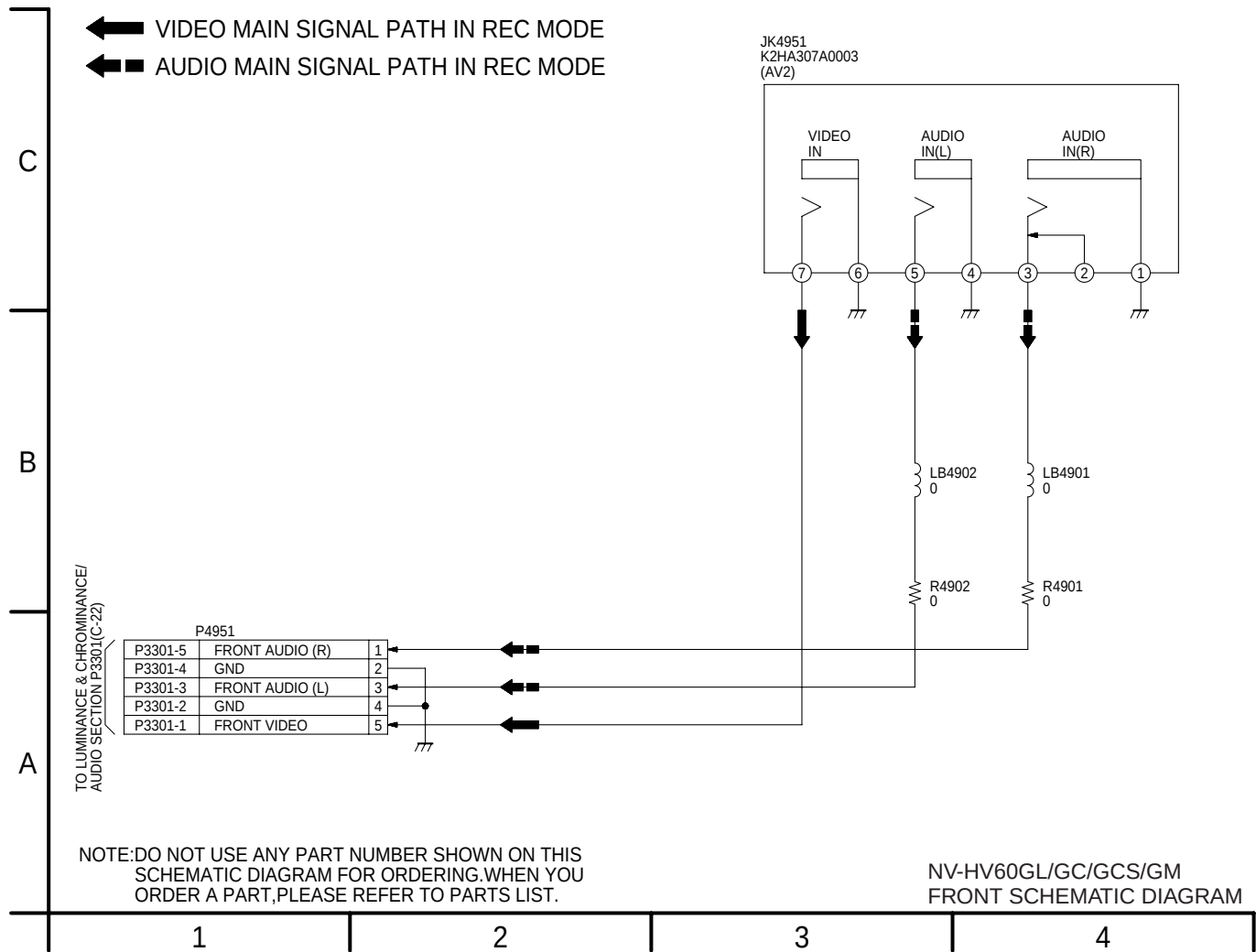




ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-HV60GL
DECODER SECTION SCHEMATIC DIAGRAM

8.8. FRONT SCHEMATIC DIAGRAM





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